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14. ABSTRACT The potential use of long-range ballistic missiles by Iran as a means to deliver weapons of mass destruction is a growing threat for which the United States and its European allies have no defense. An Iranian ballistic missile capability that is able to range continental Europe would not only hold US and European interests at risk, it could also lead to an even longer range capability that threatens the homeland of the United States. Therefore, the United States faces the complex security challenge of emplacing ballistic missile defense assets on European soil in the very near-term to mitigate this threat. Consequently, the United States must work through a quagmire of issues that overlap the <i>political</i> , <i>military</i> , and <i>technical</i> domains in international security cooperation in order to effectively weave ballistic missile defense into the European security fabric. This paper explores the urgent and complex issues of European ballistic missile defense integration for which there is currently no solution. This work advances the idea that both the United States and Europe must use NATO as the primary integrator of ballistic missile defense assets as the means of fusing these three domains. This paper further proposes that a capabilities-based planning approach must be employed in order to ensure that the maximum benefit from each stakeholder is gained while securing transatlantic arrangements that are mutually-beneficial for the long-term. Such an approach will provide the Allies with the tools to effectively deter, and if necessary, defeat an emerging Iranian ballistic missile threat.					
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Ballistic Missile Defense in the European Theater:

Political, Military and Technical Considerations

by

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MAJ USA

Halsey Group IVC

15 April 2007

Submitted to the Faculty of the Naval War College in satisfaction of the requirements of the Advanced Research Project for Halsey Group IVC.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: _____

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Abstract

The potential use of long-range ballistic missiles by Iran as a means to deliver weapons of mass destruction is a growing threat for which the United States and its European allies have no defense. An Iranian ballistic missile capability that is able to range continental Europe will not only hold US and European interests at risk, it could also lead to an even longer range capability that threatens the homeland of the United States. Therefore, the United States faces the complex security challenge of emplacing ballistic missile defense assets on European soil in the very near-term to mitigate this threat. Consequently, the United States must work through a quagmire of issues that overlap the *political*, *military*, and *technical* domains in international security cooperation in order to effectively weave ballistic missile defense into the European security fabric. This paper explores the urgent and complex issues of European ballistic missile defense integration for which there is currently no solution. This work advances the idea that both the United States and Europe must use NATO as the primary integrator of ballistic missile defense assets as the means of fusing these three domains. This paper further proposes that a capabilities-based planning approach must be employed in order to ensure that the maximum benefit from each stakeholder is gained while securing transatlantic arrangements that are mutually-beneficial for the long-term. Such an approach will provide the Allies with the tools to effectively deter, and if necessary, defeat an emerging Iranian ballistic missile threat.

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I. Introduction

The United States' national-level strategies are clear about using friends and allies abroad as a means for preventive engagement against growing threats. The National Security Strategy is designed to both deter threats while “bolstering our security commitments to allies.”¹ The National Defense Strategy seeks to assure allies and friends in order to strengthen alliances and partnerships and help protect common interests.² Finally, the National Military Strategy states that strong alliances contribute to mutual security while preventing a catastrophic attack by adversaries with weapons of mass destruction against the United States.³ Particularly in cases where threats are of mutual concern, these policies seek to leverage regional influence to gain collective security.

To a large degree, these policies are reflected where the United States seeks to leverage mutually-beneficial ballistic missile defense arrangements—especially where common threats pose a near-term danger. For example, in order to keep pace with North Korea's aggressive ballistic missile production and testing schedule, the United States has rushed to emplace numerous missile defense assets in the Pacific while securing a multiplicity of security arrangements with Japan. These measures range from the emplacement of a strategic sensor on Japanese soil to co-production of the Standard Missile-3 (SM-3)—a sea-launched strategic asset that will not only complement US Pacific maritime assets in the future, but may also serve to nullify any North Korean

¹ George W. Bush, *The National Security Strategy of the United States of America*, Washington, D.C.: The White House, March 2006 (p. 22).

² Donald H. Rumsfeld, *The National Defense Strategy of the United States of America*, Washington, D.C., March 2006 (p. 7).

³ Richard B. Myers, *The National Military Strategy of the United States of America*, Washington, D.C., 2004 (p. 2).

offensive missile capability. Indeed, bold events such as the 4 July 2006 North Korean missile launches into the Pacific Ocean impart a sense of urgency that tends to ease contentious processes. Rapid Congressional approval of missile defense funding, the Missile Defense Agency's (MDA) acquisition of new advanced systems, and the gaining of allied support for emplacing ballistic missile defenses in their own backyard all came as obvious courses of pursuit to counter North Korea's long-range missile ambitions.

Iran's emerging ballistic missile program however, presents a strategic problem that is not as clear-cut as the North Korean scenario. Although Iran is aggressively acquiring long-range missile technologies to increase its ballistic missile capacity, the threat does not appear to be as immediate as that of North Korea—Iran's possession of intermediate range ballistic missiles (IRBMs) that could range most of continental Europe may be some time away. Further, the degree to which these programs will set the conditions for developing even longer-range intercontinental ballistic missiles (ICBMs) that could reach the United States is equally speculative. Regardless of how it is viewed, a burgeoning Iranian missile threat does exist, and it will ultimately be incumbent upon assets positioned in Europe to detect and intercept missiles that are launched from Iran.

However, the nations of Europe, the United States European Command (EUCOM)⁴, and NATO all lack missile defense assets on continental Europe to strategically counter the growing potential Iranian ballistic missile threat.⁵ For the United States, the Pacific theater has been the sole focus for the implementation of the

⁴ While Israel is within the purview of the EUCOM Area of Responsibility (AOR), the uniqueness of the factors involved with an Iranian missile threat against Israel (directness of the threat, geographical distance, and Israel's inherent response options) make this a completely different scenario.

⁵ Neither do assets exist in CENTCOM to counter Iran's ballistic missiles in its initial phase of flight as the Airborne Laser (ABL) and Kinetic Energy Interceptor (KEI) are still in under development.

ballistic missile defense system (BMDS) infrastructure in light of a North Korean threat.⁶ Moreover, it is not entirely clear if any of the above parties are even implicitly or explicitly charged with this task, or if any of them will have the necessary will and capacity to accomplish this mission.

In light of this ambiguity, this paper addresses the challenges associated with countering the potential Iranian ballistic missile threat to the European theater. To meet its security aims in countering Iran's missile ambitions, the United States must deploy strategic deterrent capabilities in Europe in the form of ballistic missile defense systems. The employment of such systems must be rooted in national-level strategic policies while balancing European security perspectives. In doing so, there are three primary considerations that the United States must give to ballistic missile defense planning. The first consideration is technical: How to make the most of European geography to best emplace US sensors and weapon systems. The second, more complex consideration is more military in nature: How to achieve maximum benefit from command and control structures, radars and weapon systems that may be planned by individual European nations. The third, most intricate consideration is purely political: How to account for the varying positions of the sovereign nations whose consensus will allow the United States to emplace a ballistic missile interceptor site on European soil. Indeed, the United States is pursuing a number of European bi-lateral agreements concerning ballistic missile defense to support these aims. However, in the interest of operational expediency, these agreements are not always mutually-beneficial and may not take the broader European political perspective into view. At the same time, the political heads of NATO have

⁶ Only Pacific theater Aegis ships are being enhanced with SM-3 upgrades to provide a long-range missile intercept capability. Ground Based Interceptors (GBI) in Alaska and California, combined with a chain of sensors across the Pacific are additional layers in this defense.

recognized that missile defense programs may have to extend beyond addressing deployed “in-theater” short range ballistic missile (SRBM) threats to deployed troops, and have agreed to at least contemplate the problem of defending the European homeland against potential missile threats from outside of Europe.

Therefore, the United States—through EUCOM and MDA—needs to take a more holistic approach to the problem of planning ballistic missile defense in the European theater. In doing so, the United States must consider that the three interrelated *political*, the *military* and *technical* domains of ballistic missile defense planning cannot be ignores. In order to find solutions that are both effective for the short term and sustainable for the long term, each domain must be given equal attention when considering broad courses of action. For example, while US bi-lateral agreements may be pragmatic in the technical and military domains, they may ignore more long-term political implications. Conversely, NATO’s politically-layered decision-making process makes pursuing a multi-lateral approach through the Allies an unattractive option for the United States. To give such a program over to NATO would be counterproductive to facilitating the necessary military agreements and technical innovations in a timely manner.

As much as it would like, the United States cannot unilaterally emplace land-based ballistic missile defenses in Europe, even for the sake of its own security. While the use of bi-lateral agreements to achieve this end is feasible, it may not be a sustainable option. Yet, multinational cooperation is difficult, and alliance agreements can be somewhat painful. Asking other countries for permission to increase its security does not come naturally for Americans and not part of the strategic culture. However, in order to

secure the Atlantic flank, the United States will have to depend on Europe. Therefore, in order for the United States to secure effective, sustainable, and mutually-beneficial security cooperation arrangements for ballistic missile defense in Europe, an integrated approach to planning that considers the interrelated political, military and technical domains must be employed.

Even a cursory look at the three domains in ballistic missile defense planning would imply that the factors affecting each of the domains could be quite numerous. However, for the purposes of this paper, they are not meant to be exhaustive. For example, the factors affecting the military domain could include not only current capabilities and national priorities of a stakeholder, but also could include military objectives (i.e. transformation), arms control limitations, training and doctrine, leader development, equipment, history, defense budgets, etc. Recognizing that there are many complex and interrelated factors in each of the domains, the purpose of this paper is not to identify and diagram all of these relationships. Instead, the treatment of the political, military and technical domains in missile defense as a theme is intended to illustrate their interrelationship by using only a few overlapping factors to examine the relative perspectives of the United States, Europe and NATO concerning ballistic missile defense planning.

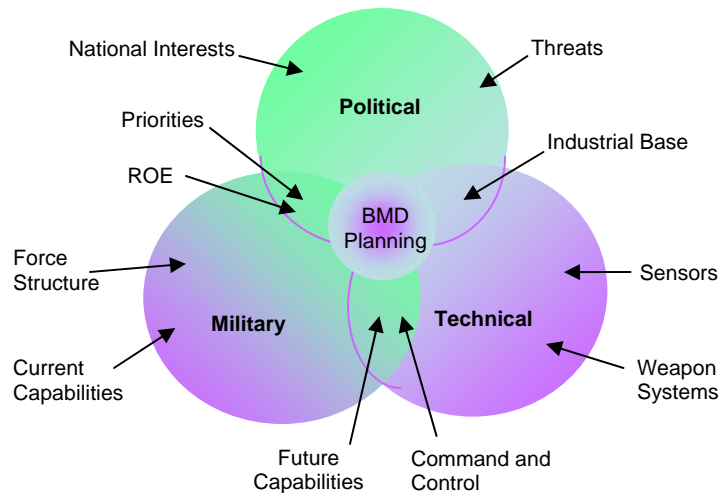


Figure 1—Domains in Ballistic Missile Defense Planning

The relationships between the domains in ballistic missile defense planning are illustrated in Figure 1. The factors that have the greatest bearing on the political domain are the security interests of the state and the threats that are relative to those interests. To further its security interests while countering threats, the political domain sets military priorities while enhancing industrial base capacity to enable technology-based solutions for military plans. Those specific plans within the military domain will, of course, have to depend on its current capabilities and force structure to carry out these political priorities. The military must, therefore, also rely on developing future capabilities to fill gaps that may exist between a current or projected threat and the capabilities the military currently holds in its inventory. These requirements also feed into the technical domain of ballistic missile defense where suitable solutions for command and control (C2), weapon systems, and sensors must be found. These requirements may become a part of national research and development efforts, which further serve the political interest of increasing industrial base capacity. Finally, any such requirement to fill capability gaps may also become part of the shared military and political priorities. Political-military

cooperation efforts may seek to achieve these capability shortfalls through allies who either possess, or are interested in developing a shared capability. Even in its simplest form, ballistic missile defense planning requires a great deal of cooperation amongst politicians, military representatives, and engineers in order to be successful. Complexity is added where allied cooperation is involved and this triad of actors is mirrored with each bi-lateral agreement that is made between the United States and an ally.

The key to integrating US interests and European national and bi-lateral ballistic missile defense efforts is through NATO. As NATO modernizes its aims and processes in order to find continued relevance in the post-Cold War era, it must be the vehicle of choice for integrating the political, military and technical domains of ballistic missile defense planning. In doing so, a common purpose of defending the homeland can serve to bridge the transatlantic divide, providing mutually-beneficial ballistic missile defense security arrangements that are sustainable for the long-term.

In order to proceed, some strategic-level considerations and assumptions must be framed. First, this paper only addresses concerns posed by Iran's missile development programs that would lead to means of delivery of weapons of mass destruction (WMD) and serve as a strategic deterrent. Specifically, these threats are an Iranian IRBM threat to the European mainland, combined with an eventual ICBM capability that could threaten the mainland of the United States, with a focus on the 2010 to 2015 timeframe. This treatment does not consider: A North Korean ICBM risk to Europe; a Syrian medium range ballistic missile (MRBM) risk to Europe; or an offshore missile attack scenario such as a ship-launched SRBM from the European littorals. While each of these scenarios could be possible, they would be the least likely courses of action in the context

of obtaining national strategic aims for both North Korea and Syria. The idea of a ship-launched SRBM, the so-called “SCUD in the tub” scenario, could feasibly be carried out on European soil by an Iranian-sponsored terrorist proxy, but this kind of act would not serve Iran’s strategic aim of regional and global deterrence. Only long-range missile assets are able to hold population centers at risk.

Strategic Foundations

Responsibilities for the United States and Europe to use multinational cooperation as a means to deter or defeat an Iranian ballistic missile threat can be found in at least eight principal strategic documents: the National Security Strategy, the National Defense Strategy, the National Military Strategy, the Strategy for Homeland Defense and Civil Support, the Quadrennial Defense Review, the Nuclear Posture Review, the European Security Defence Policy, and the European Security Strategy. These strategic documents implicitly and explicitly build a strong case for bolstering missile defense capabilities in the European theater. According to these policies, it is clear that the United States must pursue an active, layered missile defense in Europe to hedge against emerging long range Iranian ballistic missile threats.

The National Security Strategy (NSS)⁷ names Iran as a tyrant, as a sponsor for terrorism, and as a rogue state. The NSS also states that Iran’s “pursuit of WMD [and] sponsorship of terrorism threaten our immediate security interests”; that, “the United States and its allies...make no distinction between those who commit acts of terror and those who support and harbor them”; and, “we may face no greater challenge from a

⁷ George W. Bush, *The National Security Strategy of the United States of America*, Washington, D.C.: The White House, March 2006.

single country than from Iran.” The NSS also states that part of the US strategy is to “block the threats posed by the regime” by developing a “New Triad” composed of offensive strike systems, active and passive defenses, and a responsive infrastructure. This strategy is designed to both deter threats while “bolstering our security commitments to allies.” Additionally, in chapter VIII, the NSS states that NATO remains a vital pillar of US foreign policy and that cooperative relations in Europe are built on shared values and interests.

The National Defense Strategy (NDS)⁸ seeks to assure allies and friends in order to strengthen alliances and partnerships and help protect common interests. Although it does not name Iran in particular, the NDS states that “hostile forces” are pursuing WMD as a means to possess catastrophic capabilities, and that any attack against the United States or an ally would be “unacceptable.” The NDS states that, “a common view of threats and a commitment to cooperation provide far greater security than we could achieve on our own.” However, a key vulnerability is that, “some allies and partners will decide not to act with us or will lack the capacity to act with us” and, “even among our closest partners, threats will be perceived differently, and consensus may be difficult to achieve.” The NDS specifically states that one of the ways to deter aggression⁹ is to “protect against attacks (e.g. by fielding missile defenses).” It advocates the use of security cooperation as part of an “active, layered defense” and states that, our missile defense program is designed to dissuade adversaries from threatening “the United States, its forces, its interests, or its partners.”

⁸ Donald H. Rumsfeld, *The National Defense Strategy of the United States of America*, Washington, D.C., March 2006.

⁹ In the NDS, the tasks of “Deter Aggression and Counter Coercion” are the third means for under the heading “Accomplishing Our Objectives”

The National Military Strategy (NMS)¹⁰ states that strong alliances contribute to mutual security and the prevention of a catastrophic attack by adversaries with WMD against the United States, its interests, or its allies. It further recognizes that there are rogue states that, “violate treaties, secretly pursue and proliferate WMD,” and “sponsor terrorists.” The NMS states that some of these states possess ballistic missiles and could seek to control key regions in the world, but does not specifically name Iran as one of these states. The NMS advocates the building of a defense in depth by extending defensive capabilities well beyond United States borders, and uses the strategic principle of “integration” to leverage multinational capabilities through security cooperation activities. It further states that we must protect global interests from threats such as ballistic missiles and WMD.

The Strategy for Homeland Defense and Civil Support (HD/CS)¹¹ assumes that the allies of the United States will cooperate in mutually-beneficial security cooperation arrangements. It states that as part of an active, layered defense, multiple barriers to attack must be deployed across the globe in conjunction with our allies who are critical contributors to US national security. This is the first strategy that notes, “a real-time link among sensors, decision makers, and warfighters to facilitate the rapid engagement of enemy targets” must be created. This strategy also states that our allies can better protect their homelands if we help them to build capacity for their own homeland defense.

The 2006 Quadrennial Defense Review (QDR)¹² speaks of building a tailored deterrence and affirms that ballistic missile defenses have begun limited operations to

¹⁰ Richard B. Meyers, *The National Military Strategy of the United States of America*, Washington, D.C., 2004.

¹¹ Department of Defense. *The Strategy for Homeland Defense and Civil Support*. Washington, D.C., June 2005.

¹² Donald H. Rumsfeld, *Quadrennial Defense Review*, Washington, D.C., February 2006.

defend against a range of potential threats. The QDR advocates missile defense cooperation and gives Pacific region defensive operations and cooperation efforts in the development of sea-based ballistic missile defenses as an example of success in this area. The QDR also states that, “NATO remains the cornerstone of transatlantic security” but that, “in many European allied states, aging and shrinking populations are curbing defense spending.”

The Nuclear Posture Review (NPR)¹³ states, "Advances in defensive technologies will allow US non-nuclear and nuclear capabilities to be coupled with active and passive defenses to help provide deterrence and protection against attack, preserve U.S. freedom of action, and strengthen the credibility of U.S. alliance commitments." The NPR further clarifies the role of missile defenses in the nuclear balance by stating that:

Missile defenses are beginning to emerge as systems that can have an effect on the strategic and operational calculations of potential adversaries. They are now capable of providing active defense against short- to medium-range threats.; Defensive systems capable of intercepting ballistic missiles may reduce the need for nuclear weapons to hold at risk an adversary's missile launchers.; and Missile defense systems, like all military systems, can be less than 100-percent effective and still make a significant contribution to security by enhancing deterrence and saving lives if deterrence fails.

The European Security and Defence Policy (ESDP)¹⁴ is an evolution of security summits that range from 1993 to the present. From 1999 to 2003, the ESDP required among many other things, the creation and maintenance of a 60,000 soldier European rapid reaction force in response to hard lessons learned from the Balkans of not having its own capable force to address threats to European security. This land force is the basis of

¹³ Department of Defense, *Nuclear Posture Review*, Washington, D.C., December 2001.

¹⁴ Jean-Yves Haine, *ESDP: an overview*, European Union Institute for Strategic Studies. <http://www.iss-eu.org/esdp/01-jyh.pdf> Retrieved from the Web 21 August 06.

the European security posture. Its maintenance narrowly prioritizes already strained European defense budgets, thus discouraging individual European nations from investing in force structures or capabilities to address future threats. As will be discussed in Section V, the tasks associated with research and development to address emerging threats such as consultation, analysis, development, and integration of new systems have largely been left to the NATO alliance.

The European Security Strategy¹⁵ is the European Union's most important document relevant to ballistic missile defense as it brings forth grounds for an integrated ballistic missile defense structure in Europe. First of all, it finds common ground with US strategic documents in that it recognizes that the United States is not able to unilaterally confront all of its own security challenges. Second, it cites that there is a "WMD arms race" in the Middle-East and, "the spread of missile technology adds a further element of instability and could put Europe at increasing risk." Finally, this document recognizes that common threat assessments are the basis for common action among members and partners and that the, "transatlantic relationship is irreplaceable; acting together, the EU and the U.S. can be a formidable force for good in the world."¹⁶ However, even where Europe's strategic outlook concerning a possible need for new capabilities, such as ballistic missile defenses, may agree with ours the EU is very limited in their response options. In light of this, the European Security Strategy notes that, "active policies are needed to counter the new dynamic threats."

¹⁵ Council of the European Union. *A Secure Europe in a Better World: European Security Strategy*, Brussels, December 2003.

¹⁶ Differences of opinion in the United States and European Union security philosophies may serve as a barrier to effective integration. Where the EU links security concerns to social injustice (such as poverty) and energy dependency (especially from the Gulf), the US sees its security threatened more by undemocratic and unstable states. This ideological gap is further illustrated by EU and US opinions regarding the root causes of terrorism: whereas the EU focuses on social causes based on disenfranchisement, the US blames an ideology based on malice to explain terrorist motives (NSS p. 10).

Critical Views

For every good reason to implement ballistic missile defense in Europe, there are, of course, dissenting views that should be taken into account. While some of these opinions are emotionally-charged and difficult to quantify, other reasoned perspectives with cogent recommendations serve to provide a balanced perspective to planners of ballistic missile defense in Europe. While it is not my intention to methodically deconstruct any of these arguments, it is important to consider even the most extreme opposing view in order to gauge potential impacts and predict resistance to the implementation of missile defense mandates. To begin with the most critical and emotional of these opposing views, the top five political headlines against implementing ballistic missile defense in Europe are as follows:¹⁷

- Missile defense is wasteful and ineffective
- Missile defense is provocative and destabilizing
- Missile defense will weaponize space
- Missile defense will give America too much unilateral power
- Missile defense is morally wrong

A name that has become synonymous with missile defense opposition in Europe is that of the British American Security Information Council (BASIC), who keeps very a very close and skeptical view of transatlantic ballistic missile defense efforts. A recent critique of transatlantic ballistic missile defense integration states, “The United States is spending astronomical amounts on Ballistic Missile Defence...It would be irresponsible

¹⁷ As outlined in the Independent Working Group on Missile Defense, *The Space Relationship and the 21st Century: 2007 Report*. <http://www.ifpa.org/publications/IWGReport.htm> Retrieved from the Web 21 August 2006.

for NATO to squander any resources on this expensive 'Maginot Line in the sky' when there are higher priority defence and domestic programmes that remain under-funded...It is high time for the entire BMD programme to be terminated in the United States, NATO and in Central Europe...the only concrete result of this technical dream has been to further enrich the coffers of arms contractors.”¹⁸

In response to the announcement of the NATO Missile Defense Feasibility Study (MDFS) BASIC claimed that NATO efforts are a “Trojan horse” for the implementation of US systems. They further proposed that political decisions to move forward with missile defense plans are going forward without the authorization of NATO’s nations, and that there is a lack of transparency to the outside world. They contend that no missile defense information in NATO should be classified. BASIC’s reason for this political point of view is that the creation of missile defense in Europe will “symbolically put up a wall against the rest of the world.”¹⁹

The United States Government Accountability Office (GAO) has taken an analytical view of the effectiveness of US ballistic missile defense programs. In its recent report, the GAO has noted security problems with the BMDS and that the Department of Defense has not developed operational criteria for most ballistic missile defense system elements. Specifically, Aegis Ballistic Missile Defense (BMD); Command, Control, Battle Management, and Communications (C2BMC); both the forward-based and sea-based X-Band Radars (XBR); and Ground-based Midcourse

¹⁸ Ian Davis, *BASIC Calls for Declassification of NATO's Missile Defence Study*, BASIC, 31 May 2006, <http://basicint.org/pubs/Press/060531.htm> Retrieved from the Web 21 Aug 06.

¹⁹ Ian Davis, *NATO and Missile Defence: Stay Tuned This Could Get Interesting*, BASIC, 30 June 2004 <http://www.basicint.org/pubs/Notes/NATOMissileDefense-IstanbulSummit.htm> Retrieved from the Web 21 August 2006.

Defense (GMD) are all without operational criteria. The GAO also points out that operational criteria are only in development for the Terminal High Altitude Area Defense (THAAD) and Upgraded Early Warning Radars (UEWR). The report notes that the Patriot Advanced Capability – 3 (PAC-3) system is the only part of the BMDS that has established operational criteria.²⁰

II. The Iranian Ballistic Missile Threat

Iran Test-Fires Missiles Capable of Reaching Israel and American Bases. This is not an introduction to a fictional scenario, but rather a real headline taken from the media wire on 3 November 2006.²¹ This statement alone demonstrates Iran’s continued resolve to extend the range of its ballistic missiles despite continued opposition from the international community. However, this should not be surprising given that Iran seeks to shock the international community on a fairly regular basis. Some well-known recent political examples include: state denial of the holocaust; threatening to “wipe Israel from the map”; not providing full disclosure on their nuclear programs to the UN; and overtly attempting to become involved in Iraq into a collective security agreement.

²⁰ United States Government Accountability Office, *Defense Management Actions Needed to Improve Operational Planning and Visibility of Costs for Ballistic Missile Defense*, GAO-06-473, Report to the Subcommittee on Strategic Forces, Committee on Armed Services, House of Representatives, May 2006.

²¹ Tim Butcher, *Iran Test-Fires Missiles Capable of Reaching Israel and American Bases*, Daily Telegraph, 3 November 2006. <http://www.nysun.com/article/42895> Retrieved from the Web 3 November 2006.



*Iran's Revolutionary Guards Test-fire Missiles*²²

In fact, Iran's military activities as a whole have been alarming. Besides launching medium range ballistic missiles during major war games to train against a Western foe in April and November 2006²³, Iran has taken a further step of testing Europe's collective response to military aggression. This was first demonstrated on 22 August 2006 when Iranian forces seized a Romanian oil platform in claimed Iranian territorial waters.²⁴ More recently, the seizing of British naval personnel who may have unintentionally trespassed Iranian territorial waters for two weeks was a chance for Tehran to spite Western powers. Europe's paralyzed response and lack of a strong

²² Iran's Revolutionary Guards test-fire missiles during military maneuvers in a desert near Qom, Iran on 2 November, 2006. <http://www.washingtonpost.com/wp-dyn/content/photo/2006/11/02/PH2006110200789.html> Retrieved from the Web 18 November 2006.

²³ In April 2006, Iran launched a large-scale military exercise in which it tested advanced weapons, including firing the Shahab-3 missile at a time when Tehran was facing heightened pressure as a UN Security Council resolution urges it to halt uranium enrichment by 31 August 2006. http://news.xinhuanet.com/english/2006-08/18/content_4975477.htm Retrieved from the Web 18 September 2006.

²⁴ *Iran Attacks Romanian Oil Rig*, 22 August 2006, <http://news.bbc.co.uk/2/hi/europe/5274374.stm> Retrieved from the Web on September 18, 2006.

unified censure in support in both cases will not go very far in deterring future Iranian aggression. In response to Europeans joining US sanctions, President Ahmadinejad said that Europe would be, “hurt more than us.”²⁵ Clearly, Western powers do not have enough economic leverage to dissuade Iran. The evidence has shown that no amount of sanctions will change their behavior. In order to understand the basis for the actions of this growing threat, we need to first understand Iran’s positional context in terms of its intentions and capabilities. This will provide insight to planning considerations and an analytical framework for determining when and how missile defense capabilities are employed in the European theater as a deterrent measure against Iran.

Intentions

A strategic priority for Iran is to achieve parity with Israel. However, Iran lacks the strategic air assets needed for the delivery of WMD to Tel-Aviv, a distance of about 2,000 kilometers. Therefore, to be able to achieve equivalence with Israel while developing a strategic capability to help it overcome international pressure, Iran must develop missiles with ranges between 2,000 and 4,000 kilometers in order to reach not only Tel-Aviv, but European capitals and major US interests in the European theater as well. Iran is currently capable of hitting some NATO members with its missiles, but wants to be able to target all of Europe and eventually North America.²⁶ In this way, Iran can successfully deter Western “aggression” that may come in the form of sanctions or deterrent military activities. According to a recent analysis, Iran’s pursuit of a strategic

²⁵ *A Government That Thrives on Defiance*, p. 24, The Economist, Volume 379 Number 8476, 6 May 2006.

²⁶ The Shahab-3 can range Turkey and Greece (See figure 2); Marshall Billingslea, *Moscow’s Missile Defense Bluster*, Wall Street Journal, pg 17, 7 March 2007. Mr. Billingslea is a former assistant NATO secretary general and the former chairman of the NATO-Russia Council’s ad hoc working group on theater missile defense.

missile inventory is “perceived in Tehran as critical to its regional security and as a deterrent to potential foreign aggression.”²⁷ For rogue states, WMD could be a weapon of choice, not of last resort. Even a small number of Iranian missiles, against which there is currently no defense, could be enough to “inhibit US actions in support of [US] allies in a crisis.”²⁸ In other words, even a modest Iranian IRBM breakthrough capability could hold locations in Europe at risk.

In his testimony before the House of Representatives, former UN Ambassador John Bolton describes the Iranian security problem in light of its potential ramifications for Europe.²⁹ He described that in addition to their nuclear ambitions, Iran also defies international conventions by developing chemical and biological weapons and enhancing the means to deliver them. He plainly contended that Iran is developing Intermediate Range Ballistic Missiles (IRBMs) that are capable of delivering payloads to Western Europe, stating, “we cannot let Iran, a leading sponsor of international terrorism, acquire the most destructive weapons and the means to deliver them to Europe.”³⁰ It is in this context that the range of Iran’s missiles will literally determine the extent of its political influence beyond Middle-Eastern events. An undeterred long range missile program gives Tehran a highly credible bargaining chip in a world that is globalizing around them.

²⁷ Robin Hughes, *Iran’s Ballistic Missile Developments – Long-Range Ambitions*, Jane’s Defence Weekly, 13 September 2006 www.janes.com/defence/land_forces/news/jdw/jdw060908_1_n.shtml Retrieved from the Web 25 September 2006.

²⁸ 2000 *United States Department of Defense Strategy Report for Europe and NATO*, Nuclear Files, 1 December 2000. <http://www.nuclearfiles.org/menu/key-issues/missile-defense/history/us-dod-strategy-report.htm> Retrieved from the Web on 16 August 2006.

²⁹ John R. Bolton, *Testimony Before the House International Relations Committee Subcommittee on the Middle East and Central Asia on Iran's Continuing Pursuit of Weapons of Mass Destruction*, Washington, D.C. 24 June 2004.

³⁰ Here he is likely referring to a developing Intermediate Range Ballistic Missile with a range of 4,000 kilometers per CRS Report for Congress, *Missile Survey: Ballistic and Cruise Missiles of Selected Foreign Countries* (RL30427), 26 July 2005, p 21.

In light of Iran's ignoring of the 21 February 2007 United Nations Security Council (UNSC) deadline to suspend its uranium enrichment, a new round of sanctions is underway.³¹ Like similar efforts by the U.N. during the past twelve months, this will cause continued defiance by Iran. In turn, this will cause continued actions against Iran. The cycle that leads to inevitable conflict has thus begun.

The probability of Iran actually executing a doomsday scenario using its missiles to launch weapons of mass destruction against European population centers is not necessarily an unthinkable act. In the same way that a North Korean missile launch against Japan or the United States would not be a logical act according to our strategic paradigm, the use of ballistic missiles by Iran would not make sense either. In both of these cases, however, we are dealing with state actors who do not behave according to our traditional view of how strategic ends should be achieved. Because of this, we may mistakenly dismiss the rumblings of these rogue nations as not credible, likely or immediate. However, the strategic motives of such states to possess long-range missiles are likely to be exactly the same as ours—to deter foreign aggression and to ensure state survival. Indeed, President Mahmoud Ahmadinejad has clearly stated that Iran would view US military deterrent efforts as aggression against Iran, and would respond by striking US interests “anywhere in the world.”³² Therefore, we need to do less to measure the intentions of Iran's ballistic missile program and do more to credibly deter its capabilities. Iran's lack of strategic reach aircraft and its strong desire to influence global politics makes ballistic missile development (especially when combined with the

³¹ Reuters, *Major Powers Agree on New Nuclear Sanctions on Iran*, 15 March 2007. <http://edition.cnn.com/2007/world/meast/03/15/iran.nuclear.reut/index.html> Retrieved from the Web 15 March 2007.

³² Ibid. The Economist.

production of WMD) quite a logical capability to be developed. In fact, Iran is pursuing ballistic missile technology at such a fast pace from whomever they can get it, that it is difficult for analysts to keep up with its current and projected capabilities.

Capabilities

Iran has a demonstrated proclivity for developing long-range delivery systems for WMD. Based on liquid missile technology from Russia and North Korea, the Shahab-3 MRBM has been successfully tested numerous times with incremental increases in capability, such as improvements in range and payload. With a range of at least 1,300 kilometers (see figure 2), the Shahab-3 has successfully shifted from liquid to solid fuel, giving it a longer burning time and thus a greater range.³³ Analysts believe that the new solid fuel variants of the Shahab-3 may be capable of delivering WMD, including a nuclear capability.³⁴ In addition to the Shahab-3 missile, Iran is believed to have also bought Russian-made R-27 medium to intermediate range ballistic missiles from North Korea.³⁵ Western diplomatic sources also make the claim that Iran is developing a new solid fuel, multi-stage missile, the “Shahab-4”³⁶ with a possible range of up to 4,000

³³ Stratfor, *Iran: The Potential for a Satellite Launch*, Strategic Forecasting, Inc. 26 January 2007. <http://www.stratfor.com/products/premium/print.php?storyId=283517> Retrieved from the Web 29 January 2007.

³⁴ Ibid, Hughes.

³⁵ Source: Jane's Defence Weekly, 4 January 2006.

³⁶ It should be also noted that the name Shahab-4 is how Western analysts are referring to the new missile. Because this label would likely be internationally-contentious, Iran will likely give it a completely new name, such as 'Project Koussar' in order to characterize it as a space launch, not a missile development program.

kilometers.³⁷ According to the US Missile Defense Agency (MDA), such a “long-range” ballistic missile capability could occur shortly after the 2012 timeframe.³⁸

However, Iran’s long-range missiles are dual-use in that they could also be used as non-military space launchers. The only difference between a satellite launch vehicle and an IRBM or ICBM is what is “sitting on top of the third stage.”³⁹ The same capability used to launch a missile into space could also allow for the controlled delivery of IRBMs and ICBMs.⁴⁰ Tehran has indicated that such a vehicle fit for space launch is already assembled and could lift off “soon.”⁴¹ Although Iran’s ICBM launch capability is estimated to be around 2015,⁴² a successful satellite launch in the very near future could hasten this timeline.⁴³

³⁷ Ibid, Hughes.

³⁸ Bill Gertz, *Pentagon Eyes Missile Defenses in Eastern Europe*, Washington Times, 26 January 2007, pg. 3.

³⁹ Ibid, Stratfor.

⁴⁰ Andrew Feickert, *Iran’s Ballistic Missile Capabilities*, CRS Report for Congress (RS21548), 23 August 2004.

⁴¹ Ibid, Stratfor.

⁴² National Intelligence Council, *Global Trends 2015: A Dialogue about the Future with Nongovernment Experts*, December 2000, pg. 57.

⁴³ Ibid, Stratfor.

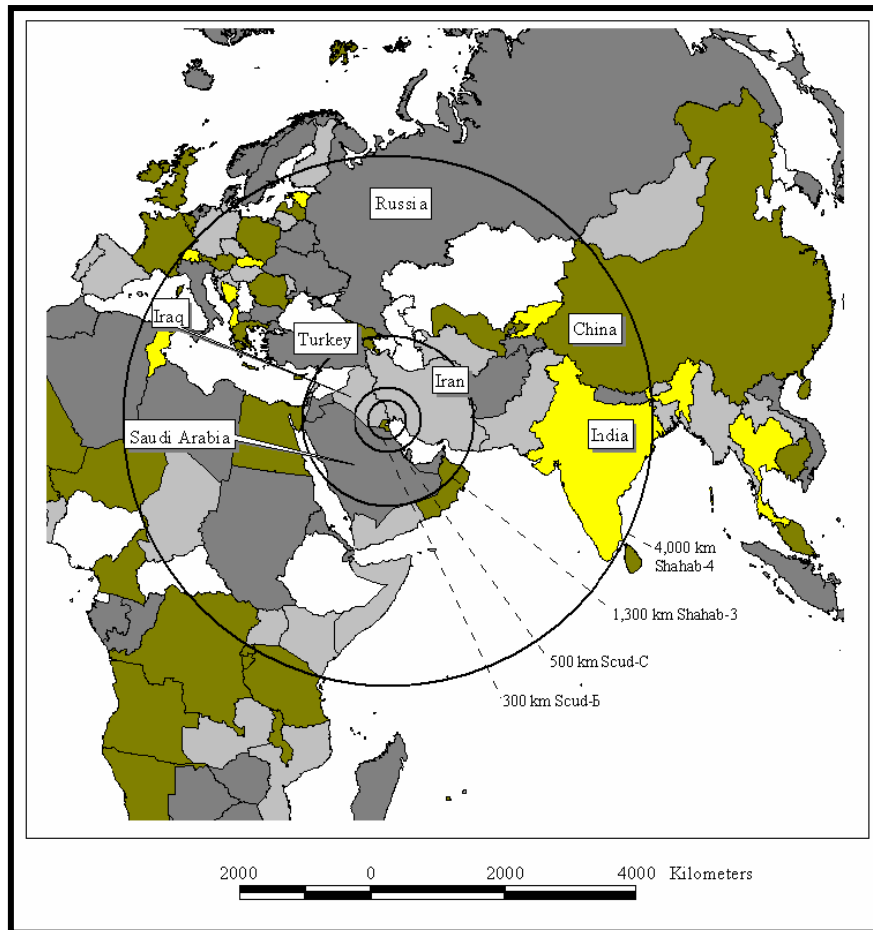


Figure 2—Ranges of Iran’s Current and Projected Ballistic Missiles ⁴⁴

As the nature of this threat becomes clearer, the United States and Europe must find strategic foundations to deter the Iranian ballistic missile threat. These foundations must stem from an agreed transatlantic assessment of what constitutes the threat and what common mandates are needed to counter it. The following sections explore the perspectives of the United States, Europe and NATO as they relate to the political, military and technical domains of ballistic missile defense planning.

⁴⁴ Source: CRS Report for Congress, *Missile Survey: Ballistic and Cruise Missiles of Selected Foreign Countries* (RL30427), 26 July 2005.

III. The United States Perspective

Ballistic missile defense in Europe is a national imperative for the United States. As a result of US policy, the military must devise the structures and systems that comprise ballistic missile defense systems. In doing this, there is a broad technical challenge to integrate these systems while filling capability gaps in order to meet specific policy mandates. This section explores how this requirement is being manifested in the political, military and technical domains.

Political

US missile defenses are not a substitute for deterrence; rather they supplement and enhance US deterrent measures and posture. The final defensive measures of shooting down incoming missiles are referred to as both “terminal-phase counter-proliferation” and as an “insurance policy.”⁴⁵

The National Missile Defense Act (Public Law 106-38) was enacted on 22 July 1999 and states, “It is the policy of the United States to deploy as soon as is technologically possible an effective National Missile Defense system capable of defending the territory of the United States against a limited ballistic missile attack.”⁴⁶ Subsequent to this in March 2001, the Secretary of Defense declared that National

⁴⁵ Paula A. DeSutter, Assistant Secretary for Verification, Compliance, and Implementation, Remarks at the National Defense University Foundation Congressional Breakfast Seminar Series, *US State Department's Role in Missile Defense*, Washington, DC, 4 April 2006. <http://www.state.gov/t/vci/rls/rm/64126.htm> Retrieved from the Web on 16 August 2006.

⁴⁶ National Policy on Ballistic Missile Defense Fact Sheet, The White House, 20 May 2003, <http://www.whitehouse.gov/news/releases/2003/05/20030520-15.html> Retrieved from the Web on 21 August 2006.

Missile Defense (NMD) would become simply Missile Defense (MD) in an effort to make the growing missile program more ally-friendly.

National Security Presidential Directive 23 (NSPD 23), National Policy on Ballistic Missile Defense was given on 16 December 2002.⁴⁷ In this policy, President Bush officially eliminated the distinction between “national” and “theater” missile defenses—an outdated concept that was a by-product of the Anti-Ballistic Missile (ABM) Treaty.⁴⁸ The US view of national and theater defenses is that they are interchangeable depending on the circumstances. This policy takes an evolutionary approach to US missile defense deployment by establishing the need for an “initial set of capabilities”⁴⁹ that can change over time to adapt to changing threats or to take advantage of technological advances.

United States policy also takes the stance that missile defense development will encourage industrial participation by allies and promote cooperation. In NSPD 23, the President tasked the Secretaries of Defense and State to “promote international missile defense cooperation, including within bilateral and alliance structures such as NATO, and shall negotiate appropriate arrangements for this purpose.”⁵⁰ The President further directed the Secretaries to “review US policy concerning the impact of US commitments under the [Missile Technology Control Regime] MTCR on cooperation and transfers of missile defense systems and technology to other countries,” directing that controls on

⁴⁷ National Security Presidential Directive 23, 16 December 2002, <http://www.fas.org/irp/offdocs/nsdp/nsdp-23.htm> Retrieved from the Web 21 August 2006.

⁴⁸ Under the ABM treaty, only a limited number of strategic assets could be employed by signatory nations. Because the US withdrew, it no longer must adhere to this semantic. However, the distinction between national and theater defenses is still used by NATO.

⁴⁹ Ibid. NSDP 23.

⁵⁰ Ibid. NSDP 23.

missile defense technology sharing and international cooperation are reviewed, implementing the MTCR in a way that allows for greater missile defense cooperation.⁵¹

In keeping with this view of enabling our missile defense efforts through broader allied cooperation, the commander of the Missile Defense Agency (MDA), Lieutenant General Obering, testified to the following:

Cooperation with our allies and friends is central to US defense strategy and the missile defense program. Engagement with our allies is critical, and will continue to be central to the missile defense program, because geography counts. We all know that ballistic missile trajectories make national boundaries meaningless. Missile defense is also very expensive, so it makes sense to leverage our collective resources. Our allies and friends bring unique design and engineering perspectives to the missile defense table, perspectives that we in the US Department of Defense welcome.⁵²

In order to carry this message to allies, the US State Department is charged with fusing US policy with Department of Defense plans to implement ballistic missile defense abroad. The primary State Department instrument of promulgating US missile defense policy to allies is through the US Embassies' Offices of Defense Cooperation (ODC). This is the most direct way for the State Department to coordinate US ballistic missile defense efforts with host nation officials. The type and level of effort varies by nation, but includes education about US policies, conducting foreign military sales, and drafting Memoranda of Understanding (MOU) to implement specific bi-lateral missile defense programs. In addition, the US Embassy military cooperation teams represent US

⁵¹ Ibid. NSDP 23.

⁵² LTG Henry A. Obering, Director, Missile Defense Agency, *Testimony to the Congressional Committee on the Missile Defense Program and the 2007 Budget*, Spring 2006.

policy views at conferences and other international forums where missile defense is discussed by proponents and opponents alike.⁵³

According to the director of the MDA, Lieutenant General Obering, the U.S. plans to deploy ballistic missile interceptors and radar in Poland and the Czech Republic respectively by 2012.⁵⁴ The plans call for a third GBI site in Europe and a south-facing tracking radar in the Czech Republic and ten interceptor missiles in Poland. While decisions have been made by the U.S. regarding the location of these assets, the U.S. still has a long way to go before they are operational. First, bi-lateral agreements must be formalized with each of these countries to specify the terms of implementation. In light of a host of concerns from each nation, it will be no easy task to convince each country that the benefits of hosting part of a European-based US missile defense site outweighs the political risks they will incur from Russia and as EU aspirants.

Next, as both of these countries are members of NATO, the U.S. must determine what, if any, role NATO will play in the command and control of an interceptor site on European soil. Concerns over degrees of protection for Europe as a whole, and the risks to debris fallout to neighboring countries will also have to be addressed. The price for snubbing NATO and the European community may be to sacrifice future NATO and European missile defense cooperation that is in the interest of the United States. The United States has already learned this lesson once in turning down NATO's support under Article 5 in the wake of the 11 September 2001 attacks. Despite the ready Allied

⁵³ For example, see the comments from the Assistant Secretary of State for Arms Control, Stephen G. Rademaker at the 24 May 2004 Wilton Park conference, *Missile Defence and Europe: Transatlantic Perspectives*, Sussex, UK. <http://www.state.gov/t/isn/rls/rm/36159.htm> Retrieved from the Web on 21 August 2006.

⁵⁴ Bill Gertz, *Pentagon Eyes Missile Defenses in Eastern Europe*, Washington Times, 26 January 2007, pg. 3.

resolve for support, the U.S. went into Afghanistan alone, only to hand the mission completely over to NATO last year. Because missile defenses depend more on sustained cooperation efforts than a troop-based response force, ready support from NATO will be much more difficult to muster should a mutual missile-defense situation arise.

Military

In consideration of how the United States should implement ballistic missile defense in Europe, we must shift from a strategic to an operational view—that is, from an idealistic approach to practical application. After decisions and agreements are made at the political level, the tools to implement these agreements are based on available doctrine and capabilities while being constrained by priorities.

Operational-level doctrine concerning ballistic missile defense is naturally reflective of national policies and sets baselines for prioritizing assets. Doctrinal guidance concerning Global Missile Defense (GMD) taken from Joint Publication 3-01 Countering Air and Missile Threats states:

GMD involves not only the defense of the United States, but its forces and US allies and friends. Currently, GMD provides limited links and assets for US and allied missile defense capabilities worldwide. The first priority is defense of the homeland from ICBM threats...A secondary priority for GMD is to counter adversary ICBMs and other long-range ballistic missiles that may be fired across-AORs from one JOA/theater of operations to another, and not just the intra-theater missile threat a geographic CCCR has traditionally faced.⁵⁵

⁵⁵ Joint Publication 3-01, *Countering Air and Missile Threats*, Revision Final Coordination, 26 June 2006, page I-12.

In response to NSPD 23, the Missile Defense Agency (MDA) is developing an integrated, layered ballistic missile defense system (BMDS) to defend against all ranges of ballistic missiles. The concept is to employ multiple sensors and interceptors that are integrated by a command, control, battle management, and communications network that will enable sensors to share missile tracking data with any other system component.⁵⁶

As initially stated, there are currently no assets in the European theater to counter ballistic missile threats. However, an overview of current US capabilities in terms of sensors, weapons systems, and command and control will serve as a framework for discussing US options for implementing land and sea-based ballistic missile defense solutions with European allies.

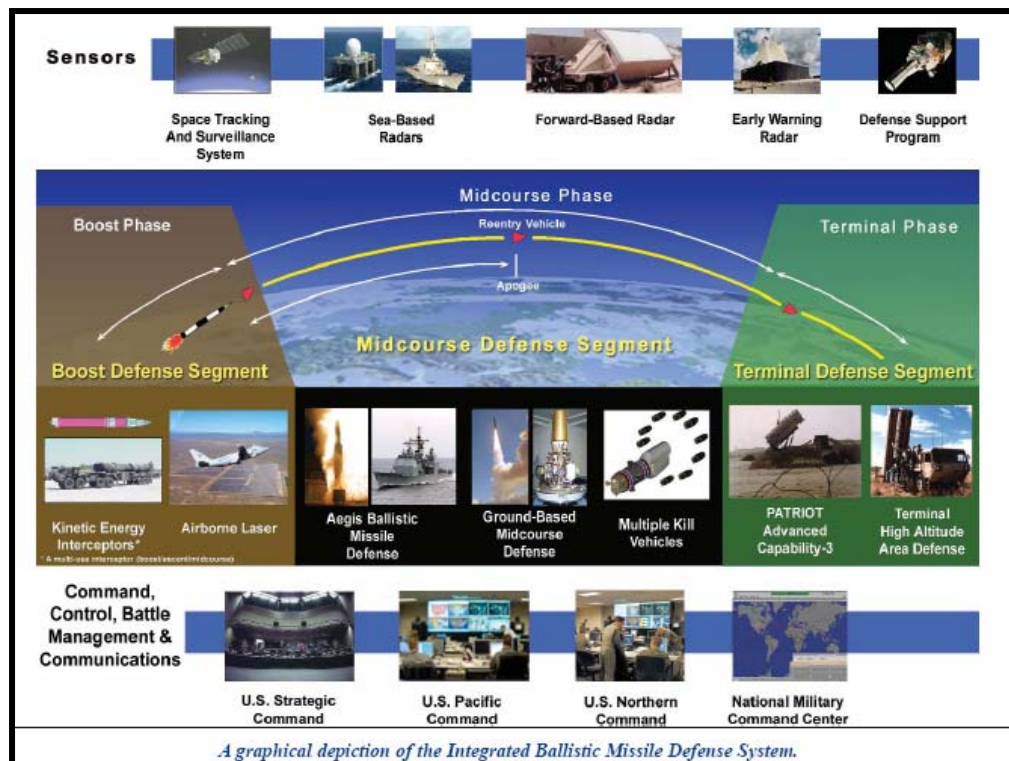


Figure 3—Ballistic Missile Defense System Concept Overview⁵⁷

⁵⁶ Source: <http://www.mda.mil/mdalink/html/basics.html> Retrieved from the Web 23 October 06.

⁵⁷ Source: Missile Defense Agency, *Ballistic Missile Defense System Booklet, 3rd Edition*, <http://www.mda.mil/mdalink/pdf/bmdsbook.pdf> Retrieved from the Web 23 October 2006.

As shown in Figure 3, the ballistic missile defense system (BMDS) concept is an integrated structure of sensors, weapon systems and command and control that seeks to track and engage long-range missiles during three distinct phases of flight: boost, midcourse, and terminal. Keeping in mind that the BMDS elements are in various phases of operational capability, a narrative description with commentary follows.⁵⁸

Boost Phase

The boost phase of missile flight is from the missile's launch until it stops accelerating under its own power at around 300 miles or less. Also, called missile burnout, this phase typically lasts from three to five minutes and is the period when the missile's signature is the brightest. A technological advantage is gained in the boost phase as BMDS sensors can quickly identify the enemy missile from space-based assets—a missile launch is really hard to hide. Intercepting a missile during this phase would be ideal as it would lend to the defense of large global areas and would prevent midcourse decoys from being deployed by the missile. However the technologies to provide this capability are not yet available.

The two boost-phase interceptors that are under development by MDA are the Airborne Laser (ABL) and the Kinetic Energy Interceptor (KEI). The most mature boost phase program, ABL combines advanced sensors, optics, and a high energy laser on a 747 aircraft platform. While dates and locations for the ABL's employment are not known, a flight test to destroy a missile is planned for late 2008. The ground-based KEI

⁵⁸ The descriptive element of the three phases of missile flight is derived from the following sources: <http://www.mda.mil/mdalink/pdf/bmds.pdf>; http://www.missilethreat.com/systems/gmd_usa.html; and <http://www.globalsecurity.org/space/systems/nmd.htm> Retrieved from the Web 23 October 06.

is not expected to enter service until around 2015. Because of the nature of the weapons, both the ABL and KEI must be relatively close to the missile when it is launched in order to destroy it.

Where the ABL and KEI are technically feasible boost-phase intercept systems, there are additional political and military considerations that must be taken into account in order for intercepts to take place near their source. Because it would be nearly impossible to resolve the final destination of a missile before it reaches its trajectory, the threat nation would have plausible deniability of its intentions. The burden of proof would then rest on the United States, if not the whole international community to articulate why the missile was shot down—likely overt the sovereign territory of the state launching the missile. An implication of this is that pre-arranged and widely promulgated command and control (C2) and rules of engagement (ROE) structures must be in place to support the boost phase component of the BMDS. Boost-phase intercept, though technically feasible, could be politically contentious, and therefore difficult for the United States to implement with its allies.

Midcourse Phase

The midcourse phase begins when the enemy missile's booster burns out and begins coasting in space towards its target, and can last as long as 20 minutes. At this point, the missile will follow a predictable glide path, allowing several opportunities to destroy the incoming ballistic missile outside the earth's atmosphere. The midcourse interceptor (such as the kind planned for Central Europe) and a variety of radars and other sensors have a longer time to track and engage the target compared to boost and

terminal interceptors. Also, more than one interceptor could be launched to ensure a successful hit.⁵⁹ A downside to the longer intercept window is the attacker has an opportunity to deploy countermeasures against a defensive system. This usually comes in the form of a warhead deploying decoys while in space. However, the interceptor and other sensors have more time to observe and discriminate countermeasures from the actual warhead.

During the midcourse phase of a long-range missile, both ground and sea-based interceptors can intercept it. First, the ground based midcourse defense (GMD) is designed to destroy ballistic missiles during the midcourse phase of flight using the ground based interceptor (GBI). Fielding of interceptors in California and Alaska is underway and the MDA plans to field up to 48 interceptors by the end of 2011. This includes ten interceptors at a European site as authorized by the 2007 US defense budget. Second, the sea-based component consists of an Aegis Ballistic Missile Defense (Aegis BMD) system with SM-3s that can engage missiles up to 1,000 kilometers from their launch point. MDA plans to field 83 SM-3s on 18 ships by 2011. As will be discussed in more detail later, none of these maritime assets are destined for the European theater.

Terminal Phase

The terminal phase begins once the missile reenters the atmosphere, and lasts from 30 seconds to one minute. It is the last opportunity to intercept the warhead before it reaches its intended target. This is the most difficult and the least desirable point at

⁵⁹ This is referred to as *shoot-look-shoot* doctrine whereby one interceptor is fired at the inbound missile, the results are evaluated, and then a second (or more) interceptor missiles are fired if the first interceptor was not successful.

which to intercept the missile—the intercept will occur very close to the target and there is very little margin for error. The primary elements in the terminal defense segment of the BMDS are the Terminal High Altitude Area Defense (THAAD) and Patriot Advanced Capability – 3 (PAC-3).

The mission of both THAAD and PAC-3 are to defend against missile attacks in their terminal phase. Because THAAD is also capable of destroying incoming missiles in the exosphere during the missile's reentry, it can defend a much greater area than the PAC-3. Therefore, PAC-3 focuses more on the protection of advanced forces and theater-level locations and assets. It should be noted, however, that both systems are designed to destroy short and medium-range ballistic missiles, and have a very limited capability to destroy the reentry vehicles (RV) of IRBMs and ICBMs due to their small size and tremendous speed. MDA plans to field a total of four THAAD firing units consisting of 24 missiles each, beginning from the present until at least 2011. Meanwhile, MDA plans call for 862 PAC-3 missiles to be fielded by the end of 2011.⁶⁰

However, fielded missiles will not necessarily equate to a viable capability in the European theater. While there is a Patriot unit in Germany, it has neither the mission nor the means to provide protection in Europe from long-range ballistic missile attacks. THAAD batteries have been planned for deployment since 1999, but the THAAD system has experienced a series of setbacks due primarily to a contract that did not provide for adequate quality assurance while not holding the contractor accountable for less than optimal performance.⁶¹ Once a worldwide-deployable THAAD battery is available, it

⁶⁰ *MDA to Field THAAD Two Years Early at Commanders' Request*, Inside Defense, 21 August 2006, http://www.insidedefense.com/secure/defense_docnum.asp?f=defense_2002.ask&docnum=ARMY-18-33-1 Retrieved from the Web 23 August 2006.

⁶¹ Source: www.globalsecurity.org/space/systems/thaad.htm Retrieved from the Web 5 September 2006.

will be in high demand and will likely be employed in a more expeditionary context than providing static defense of a population center on European soil.

Sensors, Radars and C2

Common elements through all three phases of the missile's flight are the roles of C2 and sensor systems in the BMDS. Satellites play the central role in this function as they scan the horizon for hostile ballistic missile launches and can provide cueing data to intercept systems. This is presently done by Defense Support Program (DSP) satellites which will eventually be replaced by a constellation of Space Based Infrared Satellites (SBIRS) to be operational around 2010. Once a threat launch has been detected, the satellites estimate the missile's flight path. The Space Tracking and Surveillance System (STSS) will be available around 2015 and will track the missile from boost phase through midcourse phase and will provide data for a GBI launch. The Upgraded Early Warning Radars (UEWR) are currently in place to help predict the missile's final destination during its terminal phase. To assist in this, the SPY-1 radar on forward deployed Aegis cruisers with Long Range Surveillance and Tracking (LRS&T) capability also allows for the detection and tracking of threat missile launches. To be fielded by 2011, MDA is developing four Sea-Based X-Band Radars (XBR) to search, detect and guide GBIs and allow them to differentiate between warheads and decoys. Each of these systems will potentially contribute to the launch of mid-course interceptor missiles early in the threat missile's flight.

All of the information concerning the missile's path and the assets available to counter it are made available and shared through the Command, Control, Battle

Management and Communications (C2BMC). When completely fielded, C2BMC will integrate all surveillance and tracking information through operational and strategic level commands. European Command (EUCOM) will receive a situational awareness package of C2BMC this year and will be fully fielded by 2011.⁶²

Implementing BMDS in Europe

The status of US bi-lateral efforts to implement ballistic missile defenses in Europe can be examined using the BMDS model framework. US bi-lateral efforts use the Memorandum of Understanding (MOU) as the tool to delineate roles and responsibilities between the United States and a partner nation. The terms of these agreements for ballistic missile defenses run the gamut from a general, overarching framework from which a myriad of related tasks can be inferred, to very specific arrangements for missile defense cooperation. While the former serves as an open agreement to which MOU annexes can be added for derivative tasks, the latter concerns more specific aims such as foreign military sales.

The two MOUs in Europe that contribute directly to the BMDS are the UEUR upgrades with Britain and Denmark.⁶³ The United States and the United Kingdom signed a Framework MOU on 12 June 2003 that set conditions for general missile defense integration and cooperation. The Fylingdales Annex, signed in December 2003, allows for upgrades to the radar at RAF Fylingdales to be the easternmost radar to track

⁶² Ibid.

⁶³ Mike Rance, *U.K.-U.S. Missile Defense: Would British Accept Missile Emplacements?*, Defense News.com, 15 May 2005. <http://www.defensenews.com/story.php?F=854800&C=commentary> Retrieved from the Web 3 October 2006; Wade Boese, *Greenland Radar Cleared for U.S. Missile Defense*, Arms Control Today, July/August 2004, http://www.armscontrol.org/act/2004_07-08/GreenlandRadar.asp Retrieved from the Web 3 October 2006.

threats to the United States homeland from the Middle East. A further missile defense-related Research, Development, Testing and Evaluation (RDT&E) Annex was signed in October 2004. Still, Fylingdales is characterized as having “an interim emergency capability only.”⁶⁴ Additionally, the United States and Denmark signed an MOU to upgrade the UEWR in Thule, Greenland in October 2005. The concept for the Thule radar is to serve as an additional layer to track missiles between Fylingdales and the United States as they fly westward over the Atlantic.

Although the timelines for developing both UEWRs are consistent with the need to provide layered early warning against ballistic missiles launched from Iran, their utility for countering threats to the European homeland is problematic. Geography does count. The usual concept for sensor employment is to be as close to the launch source as possible in order to maximize early warning timelines. In this case, it would appear that the UEWRs in the UK and Denmark would only serve to hedge against an Iranian ICBM launched toward the United States, and not an IRBM launched toward Europe.

A second challenge in filling the BMDS gap in Europe is with the interceptors. As with the Pacific theater BMDS model in Figure 3, both sea and ground-based interceptors should be considered in a European defense scheme. An Aegis cruiser in the Mediterranean with LRS&T and SM-3 capability could provide the necessary sensor and weapon system to complement a European BMDS architecture.⁶⁵ However, there is no planned Aegis BMD capability in the Mediterranean’s Sixth Fleet, based in Gaeta, Italy. For the near-term, all Aegis BMD capabilities are being fielded to Aegis cruisers and

⁶⁴ According to MG Obering, it is expected to be able to provide “initial sensor coverage needed against Middle-East threats.” (budget testimony p.15).

⁶⁵ The Aegis SM-3 system consists of the SPY-1 radar, the Mk-41 Vertical Launching System and the SM-3 missile with its own command and control system.

destroyers in the Pacific theater. This is likely due to the plan for two Norfolk-based destroyers to be outfitted with Aegis BMD components beginning in 2009. This will allow the Atlantic-based destroyers to either be fielded the SM-2 Block IVa⁶⁶, or to receive a small portion of the 81 SM-3s that are due for fielding by the end of 2011. According to Naval planners, if Aegis BMD platforms do eventually become a reality on the East Coast of the United States, these assets could be planned to “surge” across the Atlantic to meet threats as the situation dictates. A second option would be to use Aegis BMD platforms that may be already tasked to Central Command (CENTCOM). These assets could be given the mission to utilize LRS&T capability to monitor an Iranian threat and contribute to the early warning of a European GBI. Or, in an extreme case, an already-forward-deployed Aegis BMD could be reallocated to provide for the defense of European territory from the Mediterranean. In either case, a persistent and forward deployed Aegis BMD presence that would serve as a deterrent against Iran is not planned for the Mediterranean.

Instead, a more reactive view of reserving Aegis BMD to be employed against Iran as a Flexible Deterrent Option (FDO) is the current thought given US priorities and limited assets. Future Aegis BMD surged from Norfolk, Virginia as a Flexible Deterrent Option (FDO) could be in place in the Mediterranean in about seven days. An Aegis re-tasked from CENTCOM could be on station in about half that time—though it would take it from doing its primary roles and mission in the Persian Gulf. The question of Naval asset re-tasking presents a problem with missile defenses deployed on US Navy ships in that there is a potential for conflicts between ballistic missile defense and other

⁶⁶ The SM-2 Block IVa is an air defense missile with a proven terminal phase capability against ballistic missiles.

maritime missions belonging to that platform. Adding missile defense to the list of existing missions that a ship must perform incurs a potential “opportunity cost of diverting the ship from missions that we originally built it to perform.”⁶⁷

Since the fulfillment of a mid-course intercept in Europe from the sea is somewhat problematic, MDA aims to implement a GBI site on European soil. Called either the “third” or simply the “European” GBI site, MDA is only considering sites in the Czech Republic and Poland. With a view to begin construction in 2008, and become fully operational by the end of 2011, any setbacks due to political considerations could cause the site to be moved to a less-than-optimal location in the UK.⁶⁸

Clearly, the ultimate success of the ten-missile European GBI site and its accompanying radar will be determined by political, military and technical factors. The selection criteria has something to do with military factors in that the geography of the site must correspond, to some degree, the anticipated trajectory and type of a missile coming from the Middle East. Technically speaking, the emplacement of missile silos is also influenced by physical factors, such as soil quality. More than anything, however, the location and timeline of the European GBI site has to do with the most overlooked of all the factors: political considerations. The most obvious, but most difficult factor to overcome will be an agreement for either country to allow missile defense assets in their homeland as it would likely upset their security balance. For a former Soviet-bloc nation to be an active part of the US missile defense shield would have a regional effect that

⁶⁷ Hans Binnendijk and George Stewart, *Naval Contributions to National Missile Defense*, in *Globalization and Maritime Power*, http://ndu.edu/inss/books_2002/Globalization_and_Maritime_Power_Dec_02.htm Retrieved from the Web on 16 August 2006.

⁶⁸ *Selection of US Missile Base to be Completed in Winter*, Prague Daily Monitor, 22 October 2006, <http://missiledefenseadvocacy.org/index/bn102306-2.html> Retrieved from the Web 23 October 2006; *Pentagon to Pick Europe Anti-Missile Site*, Iran-Daily.com, 16 August 2006, <http://www.iran-daily.com/1385/2638/html/politic.htm#s167202> Retrieved from the Web 23 October 2006.

extends well beyond the parameters of a MOU—especially if Russia has anything to say about it.⁶⁹

Finally, future capabilities must be considered in examining the BMDS structure as applied to the European theater. ABL and KEI would be the two principal systems to intercept an Iranian missile in its boost phase. If political will, and therefore funding, sees these programs through to completion—and if priorities allow them to be allocated to the defense of Europe—their employment could still be politically problematic. In any case, ABL and KEI should not be considered as integral to the future baseline defense of Europe from an Iranian ballistic missile threat.

Technical

As can be inferred from the military discussion, the implementation of the BMDS in Europe presents particular challenges in integrating sensors, weapon systems, and command and control. In order to overcome this from a technical standpoint, MDA will partially field the C2BMC suite in EUCOM next year. For now, EUCOM will only receive the situational awareness component of C2BMC, thus only allowing a common picture with higher headquarters of NORTHCOM, STRATCOM, and the National Military Command Center in Washington, D.C. The overall objective of C2BMC for the Combatant Commander is to “enhance planning and help synchronize globally-dispersed missile defense assets.”⁷⁰ However, for the near term, this additional hardware will not afford EUCOM any command or control capability—only the capability to observe.

⁶⁹ The specific Russian concerns as challenges to implementation are addressed in Section VI of this paper.

⁷⁰ Ibid. Obering, p. 17.

IV. The European Perspective

There is a debate in the EU about how to approach US plans for the European GBI site. On one side is the denial of the need for such a shield over Europe, while others believe that there is a real threat and that it needs to be addressed. Proponents of integration feel the issue “belongs in NATO” to both agree on the threat and to further examine the utility of BMD over Europe. These realists such as Germany’s Chancellor Angela Merkel, the current EU President, realize that EU must reach a consensus and come to a consolidated position very soon if the EU is to have any say in their own security from ballistic missiles that may threaten them.⁷¹

At the same time, Poland already feels like it may be taken advantage of in this new relationship. They feel that the United States may not have their best interests in mind: using Poland solely for its geographical position, and taking its status as an ally for granted. The Polish do not wish to be thrown to wolves after the U.S. gets what they want and feel that the U.S. is not doing enough to deter Moscow’s missiles from being pointed at Warsaw should they agree to the missile site. Besides the security concerns it would cause, Polish politicians find it hard to support US policy when their constituency has a low opinion of US policies; there has been a less than reciprocal relationship with Poland’s participation in Iraq and Afghanistan; and their economic future rests with obtaining EU membership, not appeasing US interests.⁷²

Suffice to say that the European perspective of ballistic missile defense differs a great deal from that of the United States. One might imagine that for reasons of geographic proximity alone, Europe might have more to fear from Iran’s missile

⁷¹ Judy Dempsey, *Merkel Urges EU Unity on US Antimissile Shield*, Boston Globe, 22 March 2007.

⁷² Radek Sikorski, *Don’t Take Poland for Granted*, Washington Post, 21 March 2007, pg. 15.

development and related ambitions than the United States. However, for a variety of reasons, Europeans do not feel the immediacy of an Iranian threat—especially from ballistic missiles. According to the European security paradigm, even if such a threat did exist, it would be best handled by using diplomacy and the rule of law in an international forum. While this idealism may hold on the political level, it does not have any military teeth to back it up should diplomacy fail. Given this, there are discrete ballistic missile defense activities ongoing within Europe, but none will be developed enough to provide a deterrent effect in the timeframe needed. Militarily, nationally-developed European programs are not integrated in any way so as to contribute to a common defense. Technically, Europe's industrial base capacity to develop homegrown ballistic missile defense systems varies by nation. Most Western European countries however, do have at least some capacity to contribute to a missile defense system—should the political will exist to do.

Political

One of the main challenges of implementing ballistic missile defense in Europe is that Europeans need to be convinced that ballistic missile defense is a security imperative. Europeans are very comfortable with the non-controversial *theater* ballistic missile defense status quo. Investing in the protection of forward-deployed troops from missile attack is viewed as a politically-viable objective. Conversely, initiatives to provide European ballistic missile defense for the homeland is divisive and avoided by European politicians. At some point, the issue will become a reality that has to be faced. If Europe waits until Iran develops a capability to hold their population centers at risk in order to attain political objectives, it will be too late. Missile defenses, unlike a European

response force, cannot be cobbled together in order to answer a crisis. According to the International Institute for Strategic Studies in Brussels, “Acquiring [European] defences against missile attacks reduces the risk of strategic blackmail and thus helps to preserve the ability to act politically and militarily in crisis situations.”⁷³ Although the deterrent effects, and therefore the necessity, of European ballistic missile defense seem to be self-evident, there are five central barriers to implementation that must be addressed to the satisfaction of the European populace before any real progress can be made. These central issues are not in line with the five reasons presented by missile defense opponents.⁷⁴ Instead, contemporary European views on defense of their homeland from missiles abroad are less idealistic and more pragmatic grounds for maintaining the status quo.

The first issue in Europe’s cultural resistance to ballistic missile defense is the European preference for political resolutions to international crises. For Europeans, it is not a sign of weakness to avoid military force by all means necessary. In the modern European tradition, following the rule of law and allowing established processes to run their course is the only civilized way to resolve conflicts for the long-term. Impatiently resorting to military force is viewed as overly-aggressive, barbaric, or perhaps too “American.” In this vein, the European Council has determined that European leaders should use examples of engagement in the Middle-East, particularly in the cases of Iran and Syria, to enhance the credibility of European commitment strategies in the world.

⁷³ Klaus Becher and Helmut Schmidt, *Missile Defence: European Approaches and Interests*, International Institute for Strategic Studies, Brussels, Belgium, 2 April 2001. <http://www.eusec.org/becher.htm> Retrieved from the Web 21 August 2006.

⁷⁴ These opposition views hold that missile defense is: wasteful and ineffective; provocative and destabilizing; will weaponize space; will give America too much unilateral power; and is morally wrong.

According to a report on implementing the European Security Strategy, these engagement strategies should be guided by the three principles of:

- Creating clear frameworks for engagement that define a new and far-reaching concept of conditionality;
- Enhancing the means to monitor the efficacy of engagement; and
- Using public diplomacy to clarify the power and purpose of engagement.⁷⁵

The second concern for the European community is the stewardship of limited national defense budgets. European defense budgets typically represent between one and three percent of their national GDPs.⁷⁶ These limited security resources must be prudently allocated according to both obligations to alliances and national will. Collective security commitments with the EU, but especially with NATO, will account for a large portion of European defense budgets.⁷⁷ Alliance nations are required to contribute at least 2% of their Gross Domestic Product (GDP) in support of NATO. These funds will be used to honor unanimous agreements concerning the business of running the Alliance, the majority of which is used for NATO exercises and running daily headquarters operations.⁷⁸ The remaining amount of a given European country's

⁷⁵ Mark Leonard and Richard Gowan, *Positive Multilateralism: promoting multilateralism around the world and pursuing effective and legitimate strategies towards failed states and the spread of WMD*, Global Europe: Implementing the European Security Strategy, The British Council Brussels, December, 2003. <http://fpc.org.uk/fsblob/187.pdf> Retrieved from the Web 21 August 2006.

⁷⁶ *EU Defence Expenditures*, European Union Institute for Security Studies, February, 2005. <http://www.iss-eu.org/esdp/11-bsdef.pdf> Retrieved from the Web 18 November 2006.

⁷⁷ Each member nation is expected to contribute 2% of their GDP to collective defense under NATO, with only six nations (United Kingdom, France, Bulgaria, Greece, and Turkey) currently under compliance. Source: *European Defense Budgets Grow Slowly Despite Overseas Commitments*, http://www.spacemart.com/reports/European_Defense_Budgets_Grow_Slowly_Despite_Overseas_Commitments_999.html Retrieved from the Web 18 November 2006.

⁷⁸ Between 75% to 80% of funds received by NATO are in support of the exercise program, NATO civilian salaries, overhead, and capital investments. Individual nations are responsible for providing organic logistic support. Source: E-mail correspondence with Lieutenant Colonel Brent Penny, former Deputy for Finance and Budget, NATO Joint Force Command, Naples on 4 December 2006.

defense budget must find its allocation in the will of that particular nation. For example, in the case of Spain, is a fiscal year's worth of defense funds better used to fight terrorists at home, or to send a combat brigade to Afghanistan for six months, or to buy into missile defense programs? While the first two choices offer popular and political clout due to their more immediate benefits, the third choice is representative of the larger European view of ballistic missile defense not gaining an immediate return on a national investment.

A third hesitation on the part of Europe to not institute ballistic missile defenses is European industrial base protection. If and when ballistic missile defenses are to be introduced in Europe, officials feel that it should be at a time of Europe's choosing and use home-grown technology. European politicians fear that regardless of their consent to be a party to the global BMDS, the United States will go forward with plans to emplace interceptors and supporting systems in Europe. If there is no political buy-in on the part of Europeans as a whole, then there should at least be some economic benefit. In other words, if Europe's security is forced on them by the United States, this should not undermine Europe's ability to at least co-produce system components and provide technical support for systems residing on European soil.

The fourth concern of Europeans is debris management that would necessarily have to be addressed following a successful missile intercept over European soil. Again, much would depend on geography—and physics. Calculating the factors of the position of a mid-course interceptor site, probable launch locations from the Middle East, combined with the types of ballistic missile(s), types of warheads, and the type of interceptor should give clues as to trajectories and subsequent potential exospheric

intercept points. The territories directly under these points must be considered beforehand. If any sovereign along a projected flight path objects to the risk presented by debris, it must be addressed. To Europeans, the relative degree of risk, however small, is not a factor. Small metal parts landing harmlessly in an open field should be given the same consideration as a WMD warhead landing in an urban area. This issue has already been the source of much debate, largely because Europeans view debris as a major issue and the United States does not.

The United States' default position on the subject is, "Surely you'd prefer the small risk from debris to that of allowing the missile to proceed to its target? Don't you know that the enormous amount of debris from the Columbia disaster hit no-one?"⁷⁹ To the Europeans, this is not a valid argument as most of the Colombia debris fell harmlessly into the sea, some quite substantial pieces did make landfall. In any case, informed decisions by both sides that consider potentially affected third-party nations will be required to understand what the debris risks are and how they can be mitigated.⁸⁰

The fifth, and perhaps most popular case for European unwillingness to implement ballistic missile defense in their homeland is that of a low threat perception. Because a ballistic missile threat to Europe is not perceived as real or at least imminent, there is an overall lack of public consciousness about the length of time it would take to develop a ballistic missile defense system after the threat materializes. A senior British officer is noted as saying in 2001, "We don't feel this sense of foreboding and threat which seems to underlie all discussions with the United States...having not felt the

⁷⁹ From the remarks of Dr. Michael Rance at the *Space and Missile Defense Conference*, Huntsville, Alabama, August 2005.

⁸⁰ Dr. Rance also discusses the case of bystander nations who become victims, using the response of Brazil to the killing of one of its citizens in London who was mistaken for a terrorist. Brazil was justifiably upset—according to Rance, nations do not like to be taken for granted by the "big boys."

imminent possibility of ballistic missile attack for some forty years.”⁸¹ Overall, Europeans view missile defense as a “particular solution to a relatively narrow problem” based on an improbable threat.⁸² An analyst from the Royal Institute of International Relations in Brussels recently stated, “Politically, Europeans understand that there is a potential danger from the Iranians but it is not a danger that they see likely in the short term...the sense of urgency is far less present in Europe than in the United States.”⁸³ The credibility of an Iranian ballistic missile threat to Europe was echoed by the Institute’s London office, “What matters at present is defending troops that might be deployed rather than defending Berlin against a *perception* of a threat” [emphasis added].⁸⁴

The United States seems to understand that the European threat perception issue is key to future cooperation efforts, and cannot be dismissed as easily as the previous four European barriers to implementation. Therefore, lobbyist groups such as the Missile Defense Advocacy Agency (MDAA) seek to show what the European “man on the street” really thinks about his country’s security relative to ballistic missile threats. This is done as sort of a backdoor way to “inform” European politics and encourage cooperation in US-led missile defense efforts on the European homeland.

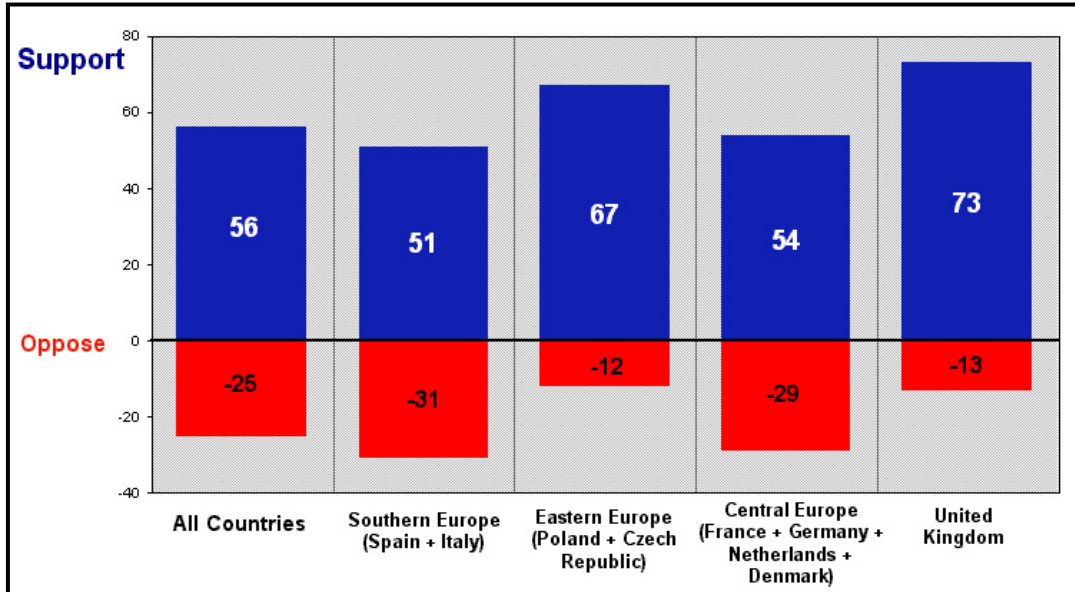
Figure 4 below shows the results of an August, 2005 MDAA poll asking the question, “Do you think your country should or should not have a missile defense system with the ability to protect its population and economy from an attack by missiles that might contain nuclear, chemical, or biological weapons?”

⁸¹ Andrew J. Pierre, *Europe and Missile Defense: Tactical Considerations, Fundamental Concerns*, Arms Control Today, May 2001. http://www.armscontrol.org/act/2001_05/pierre.asp Retrieved from the Web 21 August 2006.

⁸² Ibid. Andrew J. Pierre.

⁸³ *Europe Sceptical About US Missile Shield Plans*, SPACEWAR, 24 May 2006. http://www.spacewar.com/reports/Europe_sceptical_about_US_missile_shield_plans.html Retrieved from the Web 16 August 2006.

⁸⁴ Ibid.

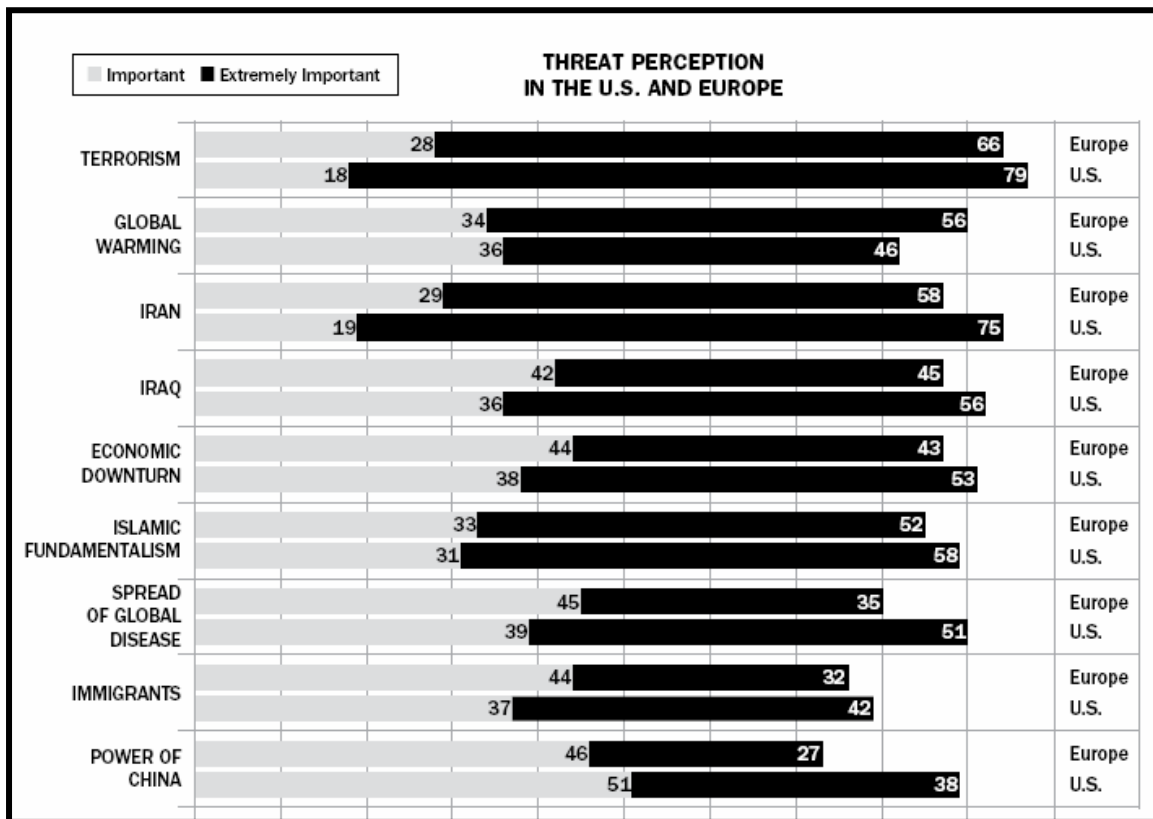


*Figure 4—European Perceptions of Ballistic Missile Defense*⁸⁵

Given that the survey question is somewhat predisposed to emotional bias, it is surprising that just over half of continental Europeans surveyed replied in the affirmative. While MDAA is trying to prove overall European public support for homeland ballistic missile defense, looking at the “white space” in their evidence would seem to indicate that Europeans are quite savvy about the issue and are taking a reasoned and cautious approach to a question that really amounts to, “Do you choose to suffer at the hands of others?” The question is based on fear and does not ask how a missile threat ranks as a relative security threat compared to other risks. If threats were measured relative to one another it would be more useful in terms of informing national priorities and therefore defense budget allocations and distribution. Again, taking the case of Spain with a limited defense pocketbook, missile defense cannot compete with combating terrorism at

⁸⁵August 2005 poll conducted by Novatris/Harris for MDAA. Source: <http://missiledefenseadvocacy.org/images/intsupport.jpg> Retrieved from the Web 23 October 06.

home or abroad—especially when two dozen of its citizens were just killed in a train bombing.



*Figure 5—Threat Perceptions in the U.S. and Europe*⁸⁶

While missile defense is not addressed specifically in the above chart, Figure 5 serves to show a more balanced view of the range of threats that face European security as compared to the United States. According to the chart, Europeans feel that an Iranian threat is less important than terrorism, more important than the fear of a pandemic, but just about as important as global warming. While over half of Europeans acknowledge an

⁸⁶ Source: Transatlantic Trends, Key Findings 2006.
http://www.transatlantictrends.org/doc/2006_TT_Key%20Findings%20FINAL.pdf. Retrieved from the Web 30 September 2006.

Iranian threat as “extremely important”, it is still scores far less than the United States by a wide margin.

Is it possible, then, that a pending Iranian threat is known in Europe, but just not openly recognized? According to one source, NATO has been operating under the assumption that most of Europe will be within reach of missiles from outside Europe, but that European politicians are not willing to publicly acknowledge this threat. By doing so, they would be forced to act, putting an additional strain on already stretched defense budgets.⁸⁷ This view is echoed by a Canadian commentator who states that to accept the US threat assessment would be to “raise the spectre of a European public demanding a response, and questioning why the U.S. is seeking defence, but European governments are not.”⁸⁸

Indeed, the fact that European officials have been unable to find a diplomatic solution to Iran’s non-compliance of International Atomic Energy Agency (IAEA) mandates speaks volumes of their security concerns. After nearly three years of attempting to find a diplomatic solution for Iran’s IAEA non-compliance, efforts by the EU-3 (UK, France and Germany) finally collapsed in February 2006 after continued defiance by Tehran.⁸⁹ This failure of diplomatic solutions may well underscore the need for European ballistic missile defenses as a strategic deterrent measure. If this is true, Europe will require close integration with the United States, relying on “certain key US capabilities” for implementing ballistic missile defense.⁹⁰

⁸⁷ Ibid. Klaus Becher.

⁸⁸ Ibid. Fergusson.

⁸⁹ *Recognizing Iran as a Strategic Threat: An Intelligence Challenge for the United States*, Staff Report of the House Permanent Select Committee on Intelligence Subcommittee on Intelligence Policy, 23 August 2006.

⁹⁰ James Fergusson, *NATO, Europe and Theatre Missile Defence*, Canadian Military Journal, Spring 2002. p. 45.

However, if any US efforts are to fill European capability gaps, current and planned European missile defense capabilities should be the starting point for this work. The nascent European ballistic missile capacities must be considered as a basis for a long-term development plans that take a principled approach to security cooperation efforts. An overview of European missile defense capacity and capabilities will serve to show what a starting point might look like.

Military

According to Dr. Michael Rance of the Ballistic Missile Defence Associates (BMDA), the industrial base capacity and military will to develop ballistic missile defense systems lies in the six principal European countries of France, Germany, Italy, the Netherlands, Spain, and the United Kingdom.⁹¹ It is no coincidence that these six nations have the highest GDPs in Europe, facilitating their combined defense spending of 158 billion dollars, an impressive thirty-five percent of the U.S. total. Dr. Rance states that each of these countries is, “interested, and to some degree, committed to BMD.”⁹² Of these, only France has studied the requirements for building all the components of a national ballistic missile defense system. While the French possess the industrial capacity to produce a mid-course interceptor system (their concept is called EXOGARD), they lack the defense budget resources to do so.

In the development of theater-level ballistic missile defenses, all six countries have made significant contributions. Germany and the Netherlands have a well-

⁹¹ Dr. Michael Rance, *A Proposal for Transatlantic Missile Defence Cooperation Among Seven Core Nations*, presentation given at the Multinational Ballistic Missile Defence Conference, London, September, 2006.

⁹² Ibid.

developed theater ballistic missile defense program using the Patriot and regularly participate in multinational missile defense exercises. Italy and Germany are partners with the United States in developing the PAC-3-based Medium Extended Air Defense System (MEADS) that offers protection for deployed troops against short-range missiles. France and Italy are also investing in a ground-based system, called the Sol-Air Moyen Portee/Terrestre (SAMP/T) that uses the Aster 15 and the Aster 30 missiles with a range of up to 600 kilometers.⁹³ With an initial operating capability in 2008, SAMP/T is designed to provide theater troop and asset protection, but *could* also be used to provide a point defense capability over critical assets in Europe.⁹⁴ France, Italy and the United Kingdom are tri-nationally developing the Principle Anti-Air Missile System (PAAMS) naval ballistic missile defense capability, which is also based on Aster 15 and the Aster 30 missiles. The integration of PAAMS onto maritime platforms is expected in 2007.⁹⁵ Lastly, both Spain and the Netherlands are interested in maritime ballistic missile defense, investing in developmental programs within their own naval services.

The status of ballistic missile defense in Europe could quickly be changed by even a modest alteration in political course in any of the above countries. Indeed, with upcoming changes in leadership of the United Kingdom and France this year, their national military direction is as uncertain as Italy, Spain and Germany—all of whom have recently experienced a shift in political tides away from the military element of power with new heads of state. At present, only the Netherlands would seem the most viable for

⁹³ Source: Retrieved from the Web 19 September 2006.

⁹⁴ Source: <http://www.defense-update.com/products/s/sapm-t.htm>; and http://www.deagel.com/pandora/samp-t_pm00144001.aspx Retrieved from the Web 24 October 2006.

⁹⁵ Source: <http://www.naval-technology.com/projects/horizon/> Retrieved from the Web 24 October 2006.

continued political will to continue to develop ballistic missile defense for the foreseeable future.

Technical

For all of the superb national ballistic missile efforts in Europe by the “top six,” they amount to nothing if they are not collectively integrated. The challenge of integrating sensors, weapon systems, and command and control must be overcome at the theater level if there is any hope of integrating a national European missile defense system. Unfortunately, once a technical issue is identified, it becomes a political matter and no longer resides in the technical domain. Therefore, any eventual integration of European systems will require a great deal of legal cooperation whose hope will lay in EU membership rules. Issues of technical integration on the European homeland will be quite different than those of theater ballistic missile defense operations. The issues of where sensors will be placed, how information will be shared, and who actually pushes the buttons to fire missiles, are all top-level political decisions that will have to be technically supported. While eventual European national-level integration solutions may find their roots in theater-level technical breakthroughs, the procedures governing the use of these technologies will have to be completely different. For now, however, suffice to say that Europe is still wrestling with the first step of integrating their theater ballistic missile defenses in order to be interoperable on the battlefield. This is where the first breakthroughs and precedents will occur, and NATO is the forum for threading together these European systems that are evolving separately.

V. The NATO Perspective

Missile defense in NATO found its beginnings in NATO with the 1991 Rome Declaration which identified “the proliferation of weapons of mass destruction and of their means of delivery” as a clear threat to international security.⁹⁶ It was not until 1993, however, that efforts were made in earnest to address issues of employment and the command and control of theater ballistic missile defense systems, centering around the modernization of the Air Command and Control System (ACCS). Upgrades to ACCS occurred in response to increasingly complex NATO air operations, but with residual benefit to potential theater ballistic missile command and control architectures. The ballistic missile defense requirement was reiterated in 1999 at the NATO Summit in Washington, D.C. which stated that the Alliance required capabilities to address “the risks associated with the proliferation of NBC weapons and their means of delivery.”⁹⁷ This set the initial framework for the Active Layered Theater Ballistic Missile Defense (ALTBMD) requirements to be examined as a first step to see how NATO could best integrate national ballistic missile defense systems. Next, the 2002 Prague Summit called for the recently-completed Missile Defense Feasibility Study (MDFS) to look at the protection of alliance territories and population centers against emerging long-range ballistic missile threats. The Riga Summit in November, 2006 confirmed that NATO missile defense is an area that will require further national attention and agreement before the feasibility study can be continued into something more concrete, stating that there

⁹⁶ *Rome Declaration on Peace and Cooperation*, NATO Review, December 1991.

⁹⁷ *The Alliance's Strategic Concept, The Reader's Guide to the NATO Summit in Washington*, NATO, Washington, 1999, Paragraph 53 (h), pg. 57.

will be “continued work on the political and military implications of missile defence for the Alliance including an update on missile threat developments.”⁹⁸

Political

NATO’s role in ballistic missile defense is defined by the larger context of the state of transatlantic relations. As a neutral integrator of the political, military and technical domains, nations will only get out of NATO what they put into it. For nations on both sides of the Atlantic, dialogue and transparency with NATO are required if the Alliance is to be relevant and effective. If NATO is to work for the maximum benefit of all concerned, the subject of such dialogue must include an open discourse on national intentions and threat assessments. From this political discussion an assessment of the capabilities—but more importantly the capability gaps—need to be identified in order to meet future common challenges. From here, a technical way ahead to produce or perpetuate these capabilities can be established.

Ideally, the above conditions should be absolutely pre-requisite to the emplacement of ballistic missile defense assets in Europe. However, we must deal in the currency of the real world, where Alliance interests must be seconded to national concerns. It is fair question to ask however, “What should we expect from NATO as a minimum?” This expectation will translate into the minimum action that NATO should take in bridging Allied ballistic missile defense, and could range in level of commitment from the simple maintenance of the transatlantic link to the building of infrastructure to

⁹⁸ Missile Defense, though not a high priority, was on the Riga Summit agenda under Chapter 10, Capabilities, Items 2, 3 and 4 (p. 121) NATO Press Kit for Riga Summit.
<http://www.nato.int/docu/comm/2006/0611-riga/presskit.pdf> Retrieved from the Web 29 November 2006.

support weapon systems. The key to understanding the role of NATO in integrating US and European views of ballistic missile defense is to understand the politics and processes of NATO.

In the political domain, the competition of national interests is the driving force for all NATO processes. Subtle battles are fought over ideas that will help further an Alliance member's national agenda. For example, in Europe there is a sharp distinction between theater missile defense (TMD) and Missile Defense (MD)—that is, between supporting the protection of deployed forces versus the protection of territories and population centers. Recognizing a need for MD, as opposed to TMD, is seen as giving in to a fear of missile attack that should be handled by more civilized (and less expensive) means. The United States held the same distinction prior to 2002 with the labels “TMD” and “NMD” (National Missile Defense) on all of its programs. Post NSPD 23, however, all US missile defenses are now considered to be a part of a single layered, integrated ballistic missile defense system—the BMDS.⁹⁹ The war of subtleties is not won by the side with the most resources; it is won by those who have the most influence—usually by those in majority. Indeed, NATO currently uses the European TMD and MD classifications as a baseline for all ballistic missile discussions and work.

A key driver to national interests is the position of a nation relative to a potential threat. The difference in European and American missile threat assessments can be seen even as early as May 2001, where it was noted that, “the timeline for the European defense ministries for the emergence of a coming ballistic missile threat is longer than that of the American intelligence community.”¹⁰⁰ In NATO terms, this means that US

⁹⁹ *Missile Defense: The Current Debate*, CRS Report for Congress, 19 July 2005, pg. 4.

¹⁰⁰ *Ibid.* Andrew J. Pierre.

and European threat assessments must be reconciled by use of a “common threat assessment” that must be agreed upon by all 26 member nations. It is here that a strategic balance must be drawn by nations on how much transparency they are willing to offer on what they know about a particular threat in return for a common solution to counter it. Thus, the common threat assessment in NATO is not based on all of the facts known by the totality of nations in the Alliance; rather it is a more watered-down version of intelligence based on the lowest common denominator of available information. As such, the US State Department—not the Department of Defense—represented the United States in the NATO working group that assessed the risk of evolving ballistic missile threats. Hence, the agreed threat assessment that is being used for NATO decision-making in the area of ballistic missile defense is derived by political, not military means. Regardless of the rigor that is put into it, the common threat assessment becomes the jumping off point for NATO military planning and procurement processes.

Military

The gist of the NATO procurement process model is that agreed threat assessments drive operational requirements. These requirements must be validated by the NATO’s political bodies of both the Military Committee (MC) and the North Atlantic Council (NAC). These approved requirements become part of the Defense Requirements Review (DRR) process and are included in the Defense Planning Process (DPP). From here, Capability Packages (CP) are produced to meet the requirements and are sustained using NATO Common Funding.

Although this sounds like quite a logical and straightforward process, its components are less than dynamic, causing the process to become unwieldy where missile defense planning is concerned. As mentioned, the first issue is that the quality of the threat assessment constrains the assumptions on which the whole process is built. To put it into the context of planning ballistic missile defense in Europe, an Iranian ballistic missile threat assessment may look a lot like what can be found in open sources. Next, the requirements process, the DRR, has traditionally been used to support force planning, not to develop systems. Therefore, issues of research, development, testing and evaluation (RDT&E) are not easily supported within this framework. The process is further constrained by the procurement process, the DPP, which can only consider capabilities that are offered by nations. The full range of capabilities that nations could theoretically bring to bear on a capability gap cannot be considered. Finally, the DPP is segmented by nation and does not require integration. Therefore, even if a full range of Allied missile defense capabilities were to exist, it cannot be assumed that they would be at the Alliance's disposal or would even work together.

This has direct relation to current ballistic missile defense efforts in NATO. Eight years had passed from the first time theater ballistic missile defense was discussed in 1991 to the time a study was directed in 1999. Completion of the ALTBMD feasibility study two years later in 2001 dictated an initial operational capability in 2010,¹⁰¹ meaning that existing national systems that are contributed to this effort can operate together. In total, some 19 years will have passed from the time ballistic missile defense

¹⁰¹ The specific model for the ALTBMD process is that the Conference of National Armaments Directors (CNAD) tasks the Programme Management Organisation, comprised of the Steering Committee and the Programme Office hosted by NC3A in The Hague, NL. ACT in Norfolk also gives input to NC3A's program development activities. ACO in Brussels serves as the national integrator. Finally, nations integrate through their respective services.

was first openly considered in NATO until some C2 solutions are developed to meet this requirement—and this is with the benefit of national political will to address the problem. In light of the fact that no direction has yet been taken for MDFs, it is dubious as to whether a developing Iranian IRBM or ICBM threat can be addressed under the current NATO decision and development paradigm.

An encumbered process that moves at glacial speed and built on weakened threat assumptions requires alternative solutions if results are to be delivered. The good news is that NATO realizes that it has challenges in managing requirements and planning in a timely manner and is working to transform its processes. As an organization, NATO is acutely aware that it must maintain its relevancy or be relegated to the “dustbins of history.”¹⁰² Therefore, it is no accident that NATO’s strategic organization responsible for change, Allied Command Transformation (ACT)¹⁰³ is in Norfolk, Virginia where it can directly benefit from the paradigm-changing work of the US Joint Forces Command (JFCOM).

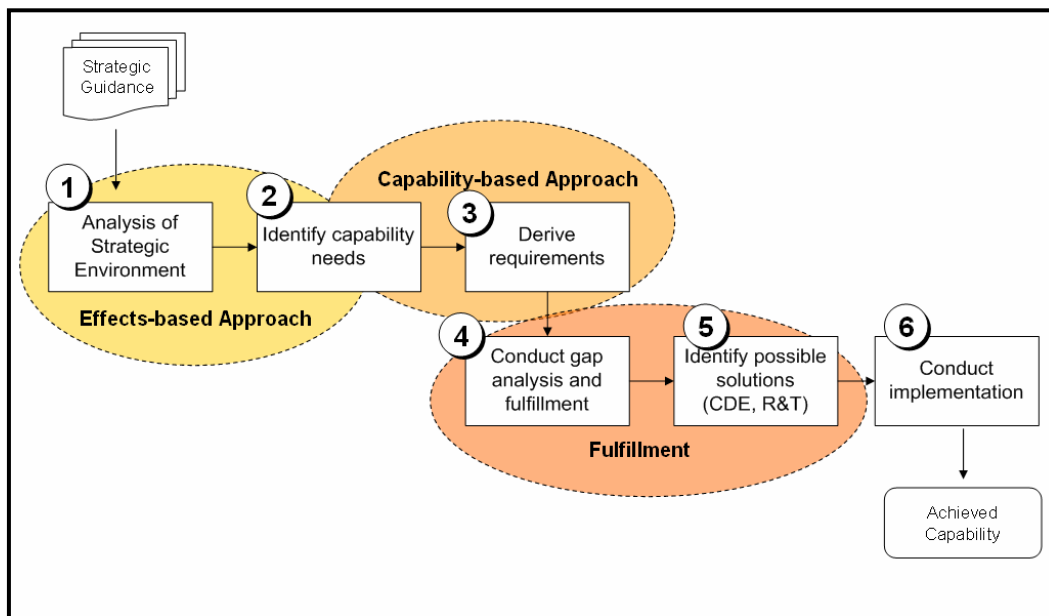
The most significant concept gleaned from JFCOM that relates to ballistic missile defense planning is the use of effects-based operations (EBO). As defined by JFCOM, EBO is defined as, “Planned, executed, assessed, and adapted actions, based on a holistic understanding of the operational environment, performed in order to influence system behavior or capabilities, using instruments of power to achieve directed policy aims.”¹⁰⁴ A key tenet of EBO is the use of a capability-based planning approach which uses a more proactive and adaptive process than traditional threat-based planning. Capability-based

¹⁰² Attributed to ADM Gregory Johnson as COM JFC Naples in 2004.

¹⁰³ NATO has two strategic commands: ACT, Norfolk and ACO, Belgium; and two operational commands: Brunssum, the Netherlands and Naples, Italy.

¹⁰⁴ JFCOM, Effects-Based Approach to Multinational Operations CONOPS with Implementing Procedures, Version 0.90, Norfolk, VA, 19 December 2005.

planning seeks to describe the range of assets that have the greatest likelihood of setting the military conditions required to achieve a desired end-state. This is a proactive approach that requires first defining the end-state (ends) and then works backwards to determine capabilities (means) of accomplishing it. From here, specific courses of action (ways) are designed to establish conditions for success.¹⁰⁵ Past planning approaches first considered the threat, and then reactively set out ways of addressing it. NATO has already adopted a new proactive approach in its operational planning process (OPP), and is in the process of revising its strategic decision and procurement structure to incorporate effects and capabilities-based approaches.



*Figure 6— NATO Capability Management Framework*¹⁰⁶

¹⁰⁵ For more information see Joint Forces Command, Commander's Handbook for an Effects-Based Approach to Joint Operations, Joint Warfighting Center, Joint Concept Development and Experimentation Directorate, Standing Joint Force Headquarters, 24 February 2006.

¹⁰⁶ Source: Allied Command Transformation Brief "Long Term Requirements Study" presented at NATO HQ, Brussels on 22 September 2005.

Figure 6 shows the NATO concept for ACT's Capability Management Framework (CMF) where both effects-based and capability-based aspects are considered as a model for NATO forecasting and acquisition processes. The two primary developmental processes that take capabilities from the conceptual to the concrete (i.e. steps 2 through 5 in Figure 6) are the previously mentioned DRR and the Long Term Requirements Study (LTRS). The DRR focuses on *quantitative* factors out to ten years and is constrained by Alliance agreed Strategic concepts, agreed intelligence, current inventories, and planned force developments. The LTRS on the other hand, focuses on *qualitative* factors out to twenty years with no constraints. The LTRS forecasts the future strategic environment, available technologies, and new capabilities that will be required with a focus on the technological component. However, only the DRR is presently used as a guide to identifying capabilities. NATO itself recognizes that a revision of existing systems or the creation of a different tool is needed to formally engage with the nations to maximize existing and planned capabilities.

Unfortunately, the DRR does not provide for much thinking “outside the box” as it is limited to only fifteen Planning Situations (PS) that range from humanitarian missions, to counter-terrorism operations, to major combat operations. PS are used to determine the minimum military requirement necessary in order to determine force levels, but can also be applied to capabilities if directed. The DRR does include requirements for lower-layer TMD assets for the protection of deployed troops. Requirements for upper-layer systems (such as THAAD) that are driven by the emergence of longer range ballistic missile threats against deployed forces will appear in the next DRR cycle. However, there is no plan yet to include continental missile defense

(MD) in DRR PS. Until such time that MD is a part of the DRR, it will not “drive” a NATO requirement to address IRBM and ICBM threats. This lack of direction in countering long range ballistic missile threats makes it very difficult for NATO to overcome technical barriers to the integration of existing systems.

Technical

The challenges associated with linking sensors, weapon systems, and C2 integration are particularly complex in NATO. Not only do the many different types of national systems have to be considered, but so do the interests of the respective nations as it concerns. These concerns rise primarily out of a concern for protecting national industrial bases as well as the safeguarding defense budgets against spiraling costs that could be tied to the development of ballistic missile defense systems. Additionally, linking different programs from different nations toward interoperability would create a web of accords between nations to facilitate (or protect) technical transfer agreements and would all but guarantee a *lack* of multinational technical standardization. In an effort to work toward agreement and facilitate technical solutions within NATO, nations use Common Funding within NATO to develop test-beds (typically using contractors to execute requirements) for system integration efforts.

The most relevant efforts within the Alliance for development of ballistic missile defense command and control solutions are the Bi-Strategic Commands Automated Information System (Bi-SC AIS) and the Air Command and Control System (ACCS). Bi-SC AIS is under development to become the C2 system for NATO at the strategic and operational levels. Bi-SC AIS is separate from ACCS, which is to become the air C2

system at tactical levels—that is, at the Combined Air Operations Center (CAOC) level and below.

The ALTBMD program now underway in NATO will specify and then implement adaptations to ACCS and Bi-SC AIS to support operations involving future ALTBMD systems that are provided by NATO nation members. The bulk of these adaptations will be to ACCS since this will ensure tactical level interoperability between NATO C2 and national air and missile defense weapon systems, sensors, data links, and communications for shared situational awareness, track cueing and coordinated engagements for NATO ALTBMD operations.

A challenge will be the integration of the C2 systems associated with ALTBMD and C2BMC, the controlling structure of the US BMDS. Because it is US Patriot (later to be MEADS), that is the PAC-3 missile backbone of the terminal phase of the BMDS, its effectiveness could be increased if it included Allied Patriot and MEAD systems in the European theater. For now, these systems will not be able to share information as they are evolving quite separately and operate from different protocols, making it difficult to bridge shared situational awareness gaps at the theater level. By 2010, this should at least be addressed in line with the initial operating capability of ALTBMD.

If ALTBMD is to set the precedent for a European continental MD solution, then these tactical level challenges with multinational C2 will only be amplified at the operational and strategic levels when fitting Bi-SC AIS and ACCS into a BMDS-like Alliance scheme. However, this will be absolutely necessary for European nations within the Alliance to be participants in a common operational picture and subsequent ROE-based decisions that may directly affect them.

VI. Implementing Ballistic Missile Defense in Europe

While the perspectives of the United States, Europe and NATO concerning ballistic missile defense serve as a guide to understanding each point of view, they do not entirely describe the current state of play relating to the success and challenges associated with implementing ballistic missile defense in Europe. Multinational exercises, agreements between the United States and individual European nations, and NATO's ballistic missile defense efforts present examples of success that should be built upon. Meanwhile, there are yet-unaddressed political, military and technical challenges associated with transatlantic ballistic missile defense cooperation that must be considered before proceeding with a way ahead.

Successes

Three recent multinational ballistic missile defense exercises showcase notable breakthroughs in ballistic missile defense cooperation and integration efforts through experimentation in command post exercises (CPX) and application in live fire exercises (LFX).

The first exercise, Nimble Titan 06 (NT06) was a CPX sponsored by US STRATCOM with strong support by the United Kingdom. The primary objective of NT06 was to test newly-formed operational concepts to “provide insights into future integrated missile defense development out to 2015.”¹⁰⁷ NT06 also investigated missile defense development processes “via a spiral pathway culminating in an operator-in-the-

¹⁰⁷ COL Tim Polaske Chief, Global Missile Defense & Combating Weapons of Mass Destruction, *Nimble Titan 2006 (Unclassified)*, USSTRATCOM/J85, 07 December 2005.

loop simulation war-game” in order to explore policy and programmatic issues. Besides exploring issues related to process, NT06 was important to ballistic missile defense in Europe because it focused on a global ballistic missile fight and explored European “3rd site” implications, to include political-military considerations. NT06 considered a full range of assets to be available including GBI, Aegis SM-3, THAAD, Patriot, a sea-based XBR, and UEWRs at Fylingdales and Thule. However, the exercise may have been a little ambitious (if not unrealistic) in that it also assumed integration of the boost phase interceptors ABL, KEI, and a space-based interceptor (SBI).¹⁰⁸ The assumption that all of these assets will be available to contribute to the defense of the European theater for a 2015 scenario may have produced unrealistic future expectations, but the importance of the exercise, more than anything, was that it serves as a starting point for discussing requirements for MD in Europe.

The second exercise, Joint Project Optic Windmill (JPOW) IX, is an annual CPX and LFX led by the Netherlands. The exercise is designed to improve multinational BMD interoperability and serve as a test-bed for new equipment and procedures. JPOW has evolved from Roving Sands, an annual air defense exercise held in the open desert near Fort Bliss, Texas involving the United States, Germany and the Netherlands—the three main users of the Patriot system. Besides the Dutch Air Force, recent JPOW iterations have involved USEUCOM, MDA, and the German Air Force as the principal players. Until recently, JPOW focused only on the theater air and missile fight. However, the annual exercise now also incorporates planning and executing ballistic missile defense at the operational-level of warfare. JPOW IX held in Crete in April 2006

¹⁰⁸ Reference: COL Tim Polaske Chief, Global Missile Defense & Combating Weapons of Mass Destruction, Nimble Titan 2006 (Unclassified), USSTRATCOM/J85, 07 December 2005.

focused on ballistic missile interception during all three phases of flight for the first time. The CPX simulations incorporated the use of the ABL, Aegis BMD, THAAD, and Patriot PAC-3 in the scenario, while the United States and the Netherlands conducted a joint Patriot LFX. Though separate and not interoperable, MDA's C2BMC and NATO ACCS were both introduced during the exercise for the first time.

Finally, Flight Test Maritime 11 (FTM-11) was the most recent installment of MDA's incremental test of the SM-3. FTM-11 integrated the US Navy with the Royal Netherlands Navy (RNLN) in the Pacific in December 2006 and was comprised of two separate events (see figure 7). The first event consisted of US and Dutch (HMS Tromp) vessels jointly detecting, tracking and performing a simulated SM-3 engagement of a ballistic target. In the second event, while HMS Tromp tracked, the US Aegis simultaneously engaged a short-range missile with an SM-3, while engaging an air-breathing threat with an SM-2. FTM-11 stressed interoperability while providing an opportunity for the RNLN to detect and track the launch using their Smart-L radar. In concept, this would mean that the US and Dutch would be interoperable enough to be able to hand a ballistic missile target to a US Aegis platform for an SM-3 engagement.¹⁰⁹

Through bi-lateral engagement and MOUs the United States has experienced a great deal of success in implementing specific programs in Europe. As described in Section III, MOUs with the United Kingdom and Denmark facilitate an early warning chain that contributes directly to the BMDS. MOUs with Germany, Italy and the Netherlands for the continued development of PAC-3 capabilities also enhance Allied

¹⁰⁹ Source: Office of Defense Cooperation, US State Department, The Hague, Netherlands, September 2006.

interoperability and could implicitly contribute to the terminal phase of the BMDS in Europe.

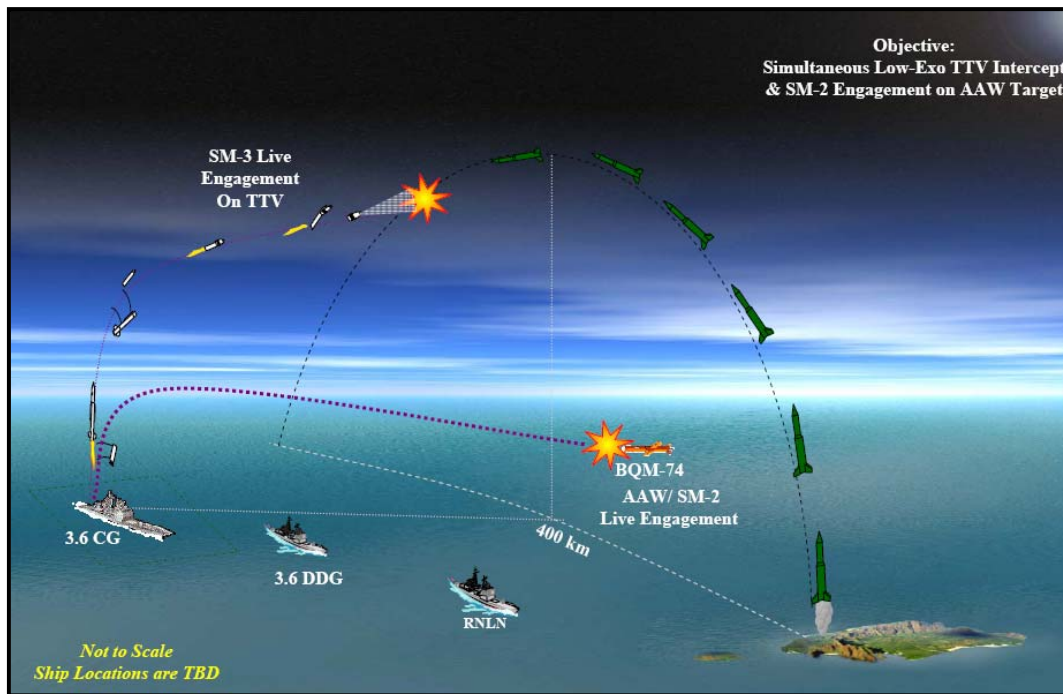


Figure 7— FTM-11 Royal Netherlands Navy Integration Concept¹¹⁰

United States foreign military sales and MOUs with European countries to increase Allied sea-based ballistic missile defense capabilities have also met with some success. These efforts could contribute to a “1,000 Ship Navy” concept¹¹¹ that synergizes the use of Allied ships with ballistic missile defense capabilities in the European theater. First, 2005 United States foreign sales have contributed to enhancing Allied sea-based ballistic missile defense capabilities. Turkey, France, Italy, and Poland

¹¹⁰ Source: Mr. Ken Hayden, MDA, Aegis BMD Project Office, *Royal Netherlands Navy Participation in FTM-11*, presentation, 23 August 2006.

¹¹¹ VADM John G. Morgan and Charles W. Martogolio, *The 1,000 Ship Navy Global Maritime Network*, Proceedings, November 2005. It should also be noted that the term 1,000 Ship Navy is now referred to as the Maritime Security Partnership Initiative to be more inclusive of the non-military contributions of allies.

have each purchased advanced air defense capabilities that can be upgraded for missile defense¹¹² while SM-2 sales were made to Germany, Netherlands and Spain.¹¹³

Next, the United Kingdom, Spain, Germany, Norway, and the Netherlands have entered into specific agreements with the United States to increase their existing maritime ballistic missile defense capabilities. The United Kingdom has twelve Type-45 air and missile defense destroyers to contribute as part of a joint US and UK capability study that is underway. Spain has four Aegis cruisers with at least one more planned, and is participating in navy-to-navy technical discussions on interoperability with the United States. Germany has three BMD frigates with compatible radars and Mk-41 Vertical Launch Systems (VLS)¹¹⁴ as well as a permanent Foreign Liaison Office in MDA's Aegis BMD office. Norway has one Aegis-based frigate with four more planned. Finally, as shown in FTM-11, the Netherlands is a willing BMD partner, increasing its maritime capacity through US tech-transfer agreements and further maritime ballistic missile defense exercises.

Although US successes can be characterized in terms of development of individual European ballistic missile defense systems, success in NATO is defined as integrating all of these systems. ALTBMD and MDFS are examples of integration consultation and planning, while the Medium Extended Air Defense System (MEADS) is an example of how NATO can facilitate the production of an actual multinational system.

¹¹² Source: <http://www.defenseindustrydaily.com/2005/05/11m-to-support-foreign-sm1-missile-customers/index.php> Retrieved from the Web on 19 September 2006.

¹¹³ Source: <http://www.defenseindustrydaily.com/2005/03/296m-more-to-support-foreign-sm2-missile-customers/index.php> and <http://www.defenseindustrydaily.com/2005/05/11m-to-support-foreign-sm1-missile-customers/index.php> Retrieved from the Web on 19 September 2006.

¹¹⁴ The Mk-41 VLS can accommodate the Aster 30 (i.e. French, Italian and United Kingdom platforms with PAAMS), the SM-2 Block IVa, and the SM-3.

The NATO feasibility study for the Active Layered Theater Ballistic Missile Defense (ALTBMD) program was contracted to Science Applications International Corporation (SAIC) and completed in 2001 in order to integrate Allied theater missile defenses that focus on protection of deployed forces. ALTBMd seeks to integrate Allied lower-tier and upper-tier systems into a layered defense using an integration test-bed. While nations are responsible for developing organic weapon systems and sensors, the crux of the project is to design and implement a command and control architecture that integrates different national lower-tier theater missile defense systems (i.e. Patriot, MEADS and SAMP/T) with upper-tier systems (i.e. THAAD) into a “single coherent, deployable defensive network able to give layered protection against incoming ballistic missiles.”¹¹⁵ The ALTBMd feasibility study was concluded in July 2005 and was approved to have an initial operating capability by 2010 at the opening of the Riga Summit on 28 November 2006.¹¹⁶ ALTBMd can be classified as a NATO success because it represents forward movement. Interoperability lessons learned could feed into future requirements as defined by a broader view on ballistic missile defense to defend territories and population centers.

At the 2002 NATO Heads of State and Government Prague Summit, leaders decided to examine options for “protecting Alliance territory, forces, and population centres against the full range of missile threats.”¹¹⁷ Subsequently, the MDFS was

¹¹⁵ *Launch of NATO's Active Layered Theatre Ballistic Missile Defence (ALTBMD) Programme*, NATO press release (2005)036 on 16 March 2005. <http://nato.int/docu/pr/2005/p05-036e.htm> Retrieved from the Web 6 September 2006.

¹¹⁶ *Missile Defence, What Does This Mean in Practice?* NATO Public Affairs, 20 June 2005, http://www.nato.int/issues/missile_defence/in_practice.htm Retrieved from the Web 6 September 2006; NATO Press Kit for Riga Summit <http://www.nato.int/docu/comm/2006/0611-riga/presskit.pdf> Retrieved from the Web 29 November 2006.

¹¹⁷ *NATO Missile Defence Feasibility Study Results Delivered*, NATO press release (2006)048, 10 May 2006. <http://www.nato.int/docu/pr/2006/p06-048e.htm> Retrieved from the Web 6 September 2006.

contracted to SAIC. The study was completed under the supervision of NATO's Missile Defence Project Group and MDA with the cooperation of NATO's armaments community. The completed MDFS was approved by the Conference of National Armaments Directors (CNAD) in April, 2006. The MDFS was announced at a 10 May 2006 press conference at NATO Headquarters in Brussels, Belgium by then Assistant Secretary General for Defence Investment, Marshall Billingslea, where he announced that "missile defense for Europe is technically and financially feasible." The MDFS shows realistic architectures for the protection of Europe in response to a series of long-range missile threat scenarios. While the specifics of these architectures are classified as NATO Secret, they were designed based on detailed modeling and testing to ensure that ballistic missiles that threaten Europe and the United States could be successfully intercepted, thus providing a "technical basis for political and military discussions regarding the desirability for such a capability."¹¹⁸

Since its release, the MDFS has been criticized for being carried out based on weak or incomplete assumptions and that it is not publicly accessible.¹¹⁹ What can be said about the MDFS is that although there is still no accord among nations, discussions will continue using NATO as the forum to discuss political-military issues such as threat assessments.¹²⁰ This study can also be classified as a success because it signals that NATO has at least begun to think about the protection of NATO's population centers and territories from foreign missile attack. While the study tells us that ballistic missile

¹¹⁸ Ibid. Riga Press Kit, p. 121.

¹¹⁹ Ian Davis, *BASIC Calls for Declassification of NATO's Missile Defence Study*, 31 May 2006, <http://www.basicint.org/pubs/Press/060531.htm> Retrieved from the Web 21 August 2006.

¹²⁰ Source: Electronic correspondence with David Sparks, NC3A, The Hague, Netherlands, 6 December 2006.

defense in Europe is technically feasible, it also warns that it will be politically difficult. Lastly, the MDFS is strategically important because it sets the international conditions for coming discussions based on the announcement of the US European GBI site.

A proven model for success is the NATO Medium Extended Air Defense System (MEADS) program. The PAC-3 based MEADS is being developed tri-nationally through NATO and includes the United States, Germany and Italy. Flight tests are scheduled for the 2011-2013 time-frame with full integration and fielding for the three participating countries thereafter.¹²¹ The NATO MEADS Management Agency (NAMEADSMA) was created to oversee the integration of the nations and their contractors in order to meet agreed timelines and specifications. Under the current agreement each country is responsible for different components while sharing the costs of development. The United States contributes 58%, Germany 25%, and Italy 17% to the overall funding of MEADS.¹²²

The success of MEADS, however, lies not in its progress to-date, but in the lessons that are being learned from the project. These are lessons to which we should pay close attention if we are to be successful in implementing future missile defense cooperation programs that include NATO in an integrating role. In an unclassified brief from the US Army, the following “lessons learned” were presented for the MEADS program:¹²³

- Running a program by committee is challenging
- US acquisition policies do not seamlessly fit multi-national programs

¹²¹ Source: <http://www.globalsecurity.org/space/systems/meads.htm> and <http://www.meads-amd.com> Retrieved from the Web 19 September 2006.

¹²² Source: MEADS Fact Sheet http://www.army-technology.com/project_printable.asp?ProjectID=2240 Retrieved from the Web 5 September 2006.

¹²³ Source: *MEADS Overview Brief*, US MEADS Program Office, Huntsville, AL, September 2005.

- Cultural and political issues can cause program delays
- Budget cycles differ between the countries, causing delays
- Currency fluctuation is a cost concern
- Technology transfer issues must be handled IAW US laws and policies

The value in the MEADS program is that the lessons could not be recognized until the project was already underway. This is probably due to the fact that none of these challenges have anything to do with the *military* or *technical* domains of missile defense program planning and implementation. The above challenges are *political* considerations that will nonetheless have to be addressed in the short-term for the continued success of the MEADS program. In the longer term, missile defense planners can benefit from the solutions to these challenges by integrating them into future cooperative planning of ballistic missile defense systems.

Challenges

A German commentator on ballistic missile defense remarked that, “Europeans should be realistic enough to know that they cannot be whole and free for many years to come without the military might of the United States.”¹²⁴ Yet, US military might in the form of ballistic missile defense cannot be brought to bear in Europe without the full cooperation of the European community in addressing the associated political, military and technical integration challenges.

¹²⁴ Martin Agüera, *ESDP and Missile Defense: European Perspectives for a More Balanced Transatlantic Relationship*, Strategic Studies Institute, Carlisle Barracks, PA, December, 2001.

Political

Three variables affect the implementation of European ballistic missile defense in the political domain. At issue are: political pressures—namely Russia’s protest to the emplacement of missile defenses in Eastern Europe; the inherent cooperative challenges associated with implementation arrangements; and the degree of desired efficiency versus required commitment in instituting bi-lateral arrangements.

The first variable is the strong Russian opposition to the establishment of a European GBI site. If systems were deployed in Europe that would—in theory—have the capability of intercepting Russia’s long-range missiles, Russia would be at risk of losing its position as a major military power. Despite evidence that it would be, “physically impossible for interceptors in Poland to chase down Russian ICBMs headed toward North America...[or] to protect Europe from a Russian missile attack”¹²⁵, the Russians continue to vigorously oppose a missile system they feel could undermine the strategic deterrent capability of their nuclear arsenal. Going back to the autumn of 2006, the Russians have stated that, “the deployment of missile defense near the Russian borders could pose a real threat to our deterrent forces...We would view that as an unfriendly gesture on behalf of the United States, some eastern European nations and NATO as a whole.”¹²⁶ More recently, a top Russian general recently threatened to target future Eastern European missile defense sites with bombers.¹²⁷ Other Russian officials, including Vladimir Putin, have threatened to nullify the 1987 Intermediate Range Nuclear

¹²⁵ Ibid. Billingslea.

¹²⁶ *Deployment of US Missile Defense in Europe is Threat to Russia*, MosNews, 18 October 2006. <http://missiledefenseadvocacy.org/index/BN10182006-2.html> 23 October 2006.

¹²⁷ This statement was made in March 2007 by Russian Lieutenant General Igor Khvorov.

Force (INF) Treaty which bans short and medium range missiles, effectively allowing Russia to target its neighbors.¹²⁸

The issues inherent with ballistic missile defense implementation arrangements also require examination. Missile defense cooperation requires detailed planning and execution agreements between nations in order to overcome complex issues. The central issue is command and control—that is, who, and under what conditions, will have the authority and responsibility for ballistic missile defense in Europe? Of pointed transatlantic concern is that of missile release authority—that is, the national right to “pull the trigger”.

Command and control sub-issues of Rules of Engagement (ROE) and Defended Asset List (DAL) are politically-related to release authority, and equally contentious. Because ROE is both politically and technically sensitive, it must have input from all actors involved in the process of ballistic missile defense planning. All of the conditions and factors that will determine which targets will be engaged, by whom, and by what means—and to what potential consequence—must be considered. For example, how soon can the point of impact of a launched enemy missile be determined, and what decision processes are in place to use the appropriate mix of sensors and shooters to achieve the maximum probability of kill (P^k) based on the established engagement criteria? The prescribed ROE must provide the answers to these questions in a manner that will not only deliver an acceptable P^k to the military commander, but also manage the risks of their political masters.

The DAL determines which assets shall be protected and in what order. It helps to inform military commanders on prioritizing the use of their limited assets—where they

¹²⁸ Marshall Billingslea, *Moscow's Missile Defense Bluster*, Wall Street Journal, 7 March 2007, p. 17.

should be massed, and where they can take more risk. Needless to say, the political implications of a DAL are far reaching. Therefore, deciding what assets are in the best mutual interests of the United States and Europe to defend together will largely depend on who owns, and therefore controls, the assets. Will it be more important to protect US or NATO assets on European soil or to simply prioritize the European population centers themselves? If a third GBI site is bilaterally emplaced, what would a EUCOM versus a NATO DAL look like? To be sure, these larger transatlantic implications must be considered. Therefore, a concern for the U.S. in securing short-term gains through bi-lateral missile defense agreements may be to jeopardize long-term cooperation arrangements concerning future ROE or DAL implementation.

However, according to a NATO source, such bi-lateral agreements between individual European countries and the U.S. may be necessary because, “we are a long way from consensus in NATO.” Thus far, the US State and Defense executors of NSPD 23 have interpreted that bi-lateral agreements are the most direct route to missile defense cooperation. However, they may not be the best option for creating conditions for continued support of US policy amongst European allies as a whole. Even though bi-lateral agreements may be to the advantage of the U.S. in expeditiously achieving ends, they tend to be divisive due to their exclusivity. Additionally, bi-lateral agreements are not always reciprocal. One British missile defense expert complained that the UK has yet to see any benefits resulting from the Fylingdales UEUR agreement. In other words, a US “coalition of the willing” approach to ballistic missile defense that favors quick action over broader cooperation may not be the ideal solution. There are implicit long-term political risks for the deployment of US ballistic missile defense assets in Alliance

territory. Therefore, it is a widely held view in Europe that countries that engage in bilateral missile defense agreements with the U.S. do so out of a sense of obligation to the world's remaining superpower, rather than a shared strategic vision.¹²⁹

Military

The greatest military challenge to the U.S. in European ballistic missile defense implementation is that the Iranian ballistic missile threat crosses combatant commands (COCOM). In its simplest terms, the Iranian ballistic missile threat resides in Central Command (CENTCOM), while potentially holding EUCOM at risk in the future. Therefore, the delineation of how much responsibility the CENTCOM and EUCOM Combatant Commanders (CCDR) each bear in neutralizing this threat is not immediately clear. In his March 2006 statement to the Senate Armed Services Committee, the EUCOM Commander, General James L. Jones made no mention anywhere in his testimony of current and planned missile defenses in light of an emerging Iranian ballistic missile threat.¹³⁰ However, the preponderance of the assets to counter this threat would fall directly under the control of the EUCOM Commander. Further, the degree to which strategic assets are allocated to the CCDRs, and the fidelity to which this information is shared between them, will have to be decided based on an integrated model of the BMDS that addresses a long-range missile threat from the Middle East as shown below.

¹²⁹ Nicole C. Evans, *Missile Defense: Winning Minds, Not Hearts*, Bulletin of the Atomic Scientists, September/October 2004, pp. 48-55 (vol. 60, no. 05).

http://www.thebulletin.org/article.php?art_ofn=so04evans Retrieved from the Web 21 August 2006.

¹³⁰ GEN James L. Jones, *Statement of General James L. Jones, Commander, United States European Command to the Senate Armed Services Committee*, Washington, D.C., 7 March 2006.

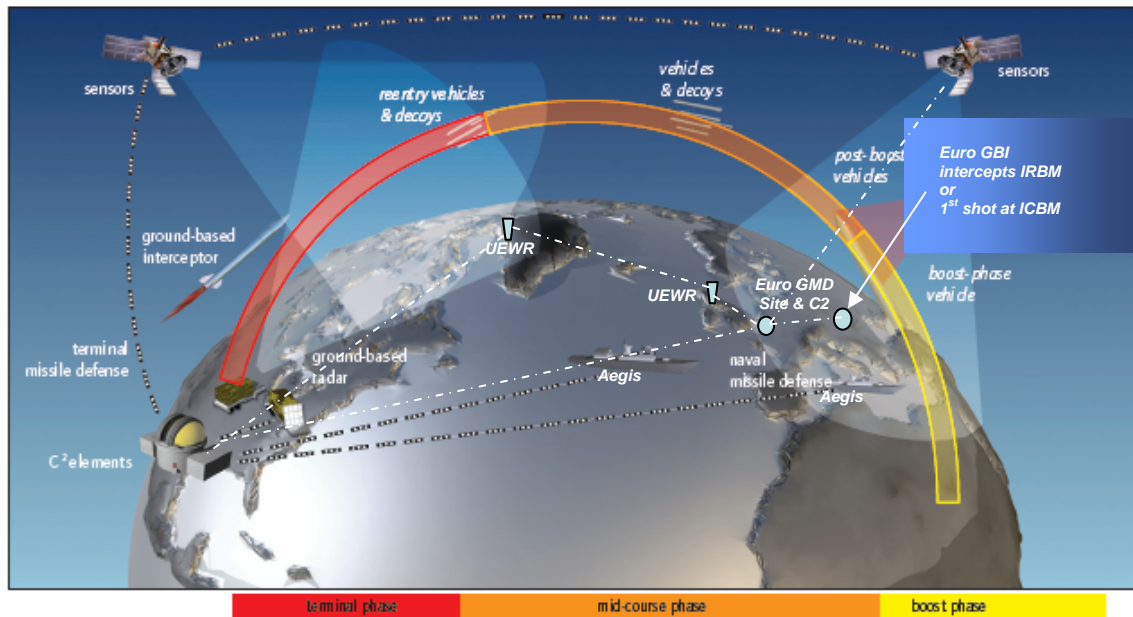


Figure 8—Transatlantic Integrated Ballistic Missile Defense System Concept¹³¹

Technical

Some of the technical challenges with NATO integration are almost a decade old with little or no progress. In examining the issue, two European Air War College students pointed out in their April 1997 conclusions, “to fulfill all necessary functions in a TBMD architecture, NATO still relies [sic] on US assets, especially space based assets...but there are no international cooperation’s [sic] to develop and deploy sensitive early warning and detection assets for TBMD purposes.”¹³² Despite French desires to do so, Europeans are unlikely to ever have the resources or the will to develop an independent early warning capability necessary for effective missile defense.¹³³ For the

¹³¹ Modified from *Notional Layered Missile Defense Concept* in Independent Working Group on Missile Defense, the Space Relationship and the 21st Century: 2007 Report. <http://www.ifpa.org/publications/IWGRReport.htm> Retrieved from the Web 21 August 2006.

¹³² Lieutenant Colonel Axel Schmidt, German Air Force and Lieutenant Colonel Frits Verschuur, Royal Netherlands Air Force, *The European Theater Missile Defense Program—A Field for International Cooperation*, Air War College, Maxwell Air Force Base, April 1997.

¹³³ Ibid. Fergusson.

foreseeable future, NATO will have continued reliance on US assets for ballistic missile defense early warning using Defense Support Program (DSP) satellites.¹³⁴ Currently, the DSP picture feeds into STRATCOM and NORTHCOM command centers, which is then pushed to the Joint Analysis Center in the United Kingdom. This same ‘picture’ then goes to NATO headquarters in Brussels, and then is finally made available to the nations. This process will have to be further streamlined in order to be responsive enough to support multinational C2 structures that have the dual requirement of political transparency and rapid decision response.

For the United States, the tool being developed by MDA to meet this need is Command, Control, Battle Management and Communications (C2BMC). In concept, C2BMC’s capabilities include crisis planning and common situational awareness at the COCOMs.¹³⁵ The system will allow the mixing and matching of sensors, weapons and command centers to leverage detection and engagement capabilities over what can be achieved by the system’s elements operating individually—maximizing the P^k for the CCCR.

To be sure, standardization of an Allied C2 system will be difficult. Even within the U.S. the C2 vision as it is being realized in C2BMC is not consolidated, and therefore not standardized. Parallel efforts in the Army and MDA will require components of one of the overlapping programs to be terminated in order to standardize the functions of C2BMC.¹³⁶ Although it may be technically feasible to use C2BMC to integrate US and

¹³⁴ DSP satellites will eventually be replaced by the Space Based Infra-Red Satellite (SBIRS) for this purpose.

¹³⁵ Ibid. Obering, pp. 8, 17.

¹³⁶ Army, *MDA Work Plan to Build C2BMC Capability for Shared Assets*, Inside Defense, 21 August 2006. http://insidedefense.com/secure/insider_display.asp?f=defense_2002.ask&docid.htm Retrieved from the Web 23 August 2006.

Allied BMD weapons systems and sensors, it may be met with political resistance as it is not European industry based. Indeed, the problems associated with implementing multinational C2 arrangements and supporting them with technical means are not new issues. However, as the threat becomes more real, keeping the status quo on these concerns will only serve to exacerbate their divisive nature.

VII. A Way Ahead

As stake holders, Europeans, through NATO, should participate in transatlantic decision-*making* concerning missile defense, not just in the decision-*sharing* after the hegemons have already determined their path. The United States will need Europe in order to implement a fully functional and well-considered missile defense program. Using NATO as an integrator will give Europeans process ownership in contributing to their own defense. Although ideological differences will remain between the United States and Europe that are based on history, culture and unique perspectives, both will need to adhere to a “NATO-first” policy in ballistic missile defense planning to ensure the enduring mutual benefits of the transatlantic link. Because most issues of *military* cooperation and *technical* interoperability stem from *political* considerations, agreeing to use NATO as a consistent forum of ballistic missile defense cooperation as the point of departure will foster an environment of increased transparency and trust.

From here, a way ahead must be determined that seeks to integrate the political, military and technical domains through fundamental, common tenets. Further, NATO must be empowered to use capability-based processes to carry out new and mutually beneficial requirements for a ballistic missile defense structure to function in Europe.

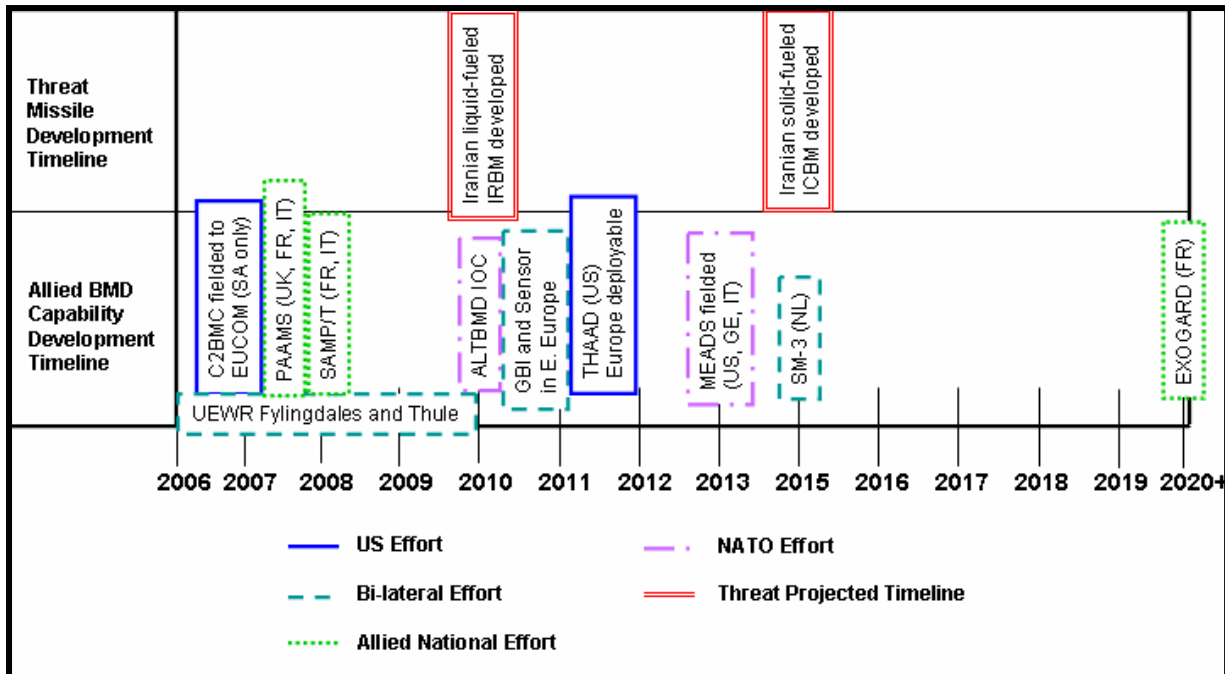


Figure 9—Threat Missile and Allied Missile Defense Development Timeline

Figure 9 above illustrates the urgency of integrating existing ballistic missile defense efforts as they relate to counteracting a probable threat ballistic missile development timeline. It also shows that the efforts described previously for the United States, European nations, and NATO need not stand alone. They can be integrated based on timescales of availability and inherent system capabilities.

Domain integration

Effective integration of the political, military and technological domains to capitalize on the successes in ballistic missile defense cooperation efforts and to overcome barriers to implementation must rely on four basic tenets. Continued leadership of the United States combined with a European lead nation, the use of a capabilities-based approach, widening NATO's role, and considering the wider political

impacts of implementation must underlie the approaches and processes that will bring a sustainable ballistic missile defense program forward in the European theater.

The first tenet is that efforts must continue to be led by the United States, but in close collaboration with a lead European nation. In order to achieve this, the United States must view the defense of Europe as a necessary end in the BMDS—not simply as an additional forward layer for early warning or a first-shot opportunity in protecting the United States. In this regard, the United States must use the continued success and momentum of bi-lateral efforts, but with the end-state of an Allied-inclusive integrated BMDS in mind. Europe is still reliant on the United States as a security provider and the transatlantic gap in military technology is widening. Therefore, some analysts believe that threat missile proliferation would only serve to strengthen NATO because of Europe’s technological vulnerability.¹³⁷ Given this, it is clear that the United States must, at least for the short-term, take the lead in all domains considered in ballistic missile defense while fostering close ties with a European nation suited to take the lead for European integration efforts. This lead European nation role would, in effect, serve as both the European voice and the NATO interface when determining ballistic missile defense solutions.

The second tenet is that a European ballistic missile defense solution must be capabilities-based and modular in its approach. Capability packages therefore, must meet two basic conditions to ensure their success. First, they must be phased in time in order to maximize the inherent qualities of existing systems and infrastructures while allowing for the integration of emerging capabilities. Second, new capabilities must be tailorable

¹³⁷ *The Impact Missile Threats on the Reliability of Overseas Bases: A Framework for Analysis*, Strategic Studies Institute, US Army War College, Carlisle Barracks, PA, January 2005.

in order to adapt to changes in any of the planning domains such as changes in political climate, the nature of the threat, or technological advances.

The third tenet toward effective domain integration is that implementation strategies must be more inclusive of NATO and more transparent to allies. While bilateral development of European ballistic missile defense programs must continue, these efforts cannot be exclusive to the agreed parties. NATO involvement must be present in all ballistic missile defense developments and integration. In this way, NATO can act as a political enabler, a military coordinator and a technical integrator. Although this implies that the United States must continue to be transparent to NATO to the maximum extent possible, it is not the same as seeking approval to NATO of all US ballistic missile defense activities, especially where the European “third” GBI site and its associated sensor are concerned.

The final tenet of implementation efforts considers the wider, extra-alliance political implications—especially where Russia is concerned. Currently, Russia seeks to know of NATO’s missile defense plans in order to mitigate the second order effects of Allied implementation.¹³⁸ Additionally, the international legal implications arising from the potential effects and impacts of emplacing missile defenses (i.e. debris management, ROE, treaty obligations and limitations, etc.) must be fully understood and addressed before any missile defenses are emplaced or deployed.

¹³⁸ Interview with Dr. Alain Houles, Director of Implementation Planning Team 8 (IPT 8), NC3A, The Hague, 25 September 2006.

NATO Empowerment

In order to achieve integration of the ballistic missile defense planning domains through the four tenets outlined, NATO must be empowered with this responsibility. As a result, this will facilitate an incremental, modular, and “niche” approach that builds on models of success and learns from past challenges.

Political

Politically, NATO will need to be empowered through policy commitments that are both internal and external to the organization. First, the United States will need to sanction at least some responsibility for NATO to move an Allied ballistic missile defense agenda forward. To be a credible commitment, there must be some nexus between the MDFS and the development of the global BMDS. Next, overarching NATO political guidance based on a US request for implementation assistance—such as that which was hoped for at the Riga Summit—would further enable military and technical efforts. This would set the proper conditions for NATO agreement on the threat and a way ahead on key decisions. Questions such as, “Would a ballistic missile launch toward the territory of an Allied nation automatically invoke Article 5?” would have to be answered under a specific planning situation (PS). This would enable the next step beyond the MDFS for a way ahead.

NATO must also be empowered to mitigate political barriers to implementation through broader engagement with Russia. Russia has been engaged in theater missile defense cooperation with NATO through the NATO-Russia Council. Using modeling, simulations and exercises, NATO has kept an open dialogue on the benefits of the

Alliance's theater ballistic missile defense programs. Because there is already an established dialogue, this may be the appropriate venue through which to address Russian concerns over strategic missile defenses being emplaced in their backyard. In other words, the NATO-Russia Council could be the right instrument to help ensure that US-Russian relations do not worsen over the missile defense debate. A unified transatlantic effort integrated by NATO would help to give the Russians a solid reassurance that planned missile defenses are intended only for the defense of Europe and the U.S. against a growing Iranian threat, and nothing else.

Lastly, empowering NATO with at least some share of the C2 would ease contentious issues of national asset control and situational awareness. Integrated assets would require, at a minimum, integrated situational awareness—perhaps a C2BMC link from STRATCOM to Brussels. Or perhaps, EUCOM would have the onus for sharing their integrated situational awareness directly with Allies. The EUCOM Commander is, after all, dual-hatted as the highest ranking NATO commander. This is not to say, however, that the United States should relinquish any decision making authority or control over any of its organic assets such as a European GBI. US strategic ballistic missile defense assets must continue to be guided by US political leadership, through STRATCOM, and then tasked to NORTHCOM or EUCOM in order to facilitate homeland defense processes such as dynamic reallocation.¹³⁹ However, NATO situational awareness would aid in the integration of multinational platforms that could contribute to the BMD fight, such as the robust sea-based capabilities that are developing in a number of Allied nations. Therefore, a more formal relationship such as the one that

¹³⁹ Dynamic reallocation is the strategic decision making model for redistributing interceptors based on the characteristics of the global threat to the homeland.

exists with Canada and the United States at NORTHCOM (formerly NORAD) could be established in Europe to be able to synergize Allied capabilities.

Military

Though not a NATO program, the US European GBI site could serve as the default capability for NATO's continental missile defense as outlined in NATO's Missile Defense Feasibility Study (MDFS). If Alliance political will to this end is realized, then NATO's tasks as a military integrator should be clearly defined. To be sure, the successes and challenges of both ALTBMD and MEADS can serve as guides for the successful integration of future programs. The orchestrated efforts of both MDA and EUCOM will be required for the transatlantic military cooperation and information sharing with NATO to occur. And NATO should also be responsible for a large part of missile defense development efforts. To this end, preliminary tasks that should be orchestrated by NATO include:¹⁴⁰

- Conducting missile defense requirements and architecture analyses;
- Modeling and simulation exercises;
- Research and development projects;
- Facilitating standardization and interoperability in co-production;
- Provision of a bias-free test-bed environment;
- Training and/or interoperability exercises;
- Ensuring national and international standards for technology transfer are met and/or not compromised; and

¹⁴⁰ Ibid. Basis of integration tasks taken from Paula A. DeSutter, *US State Department's Role in Missile Defense*, Washington, DC, 4 April 2006.

- Establishing ROE in accordance with established international rules of self-defense.¹⁴¹

NATO's military role can be further explored and defined by expanding the organization's role in relevant multinational exercises. Russian cooperation was furthered through a Russia-NATO joint command post missile defense exercise held in Moscow from 16-25 September 2006 to "study the compatibility of Russian and NATO theater missile defense systems."¹⁴² Continued cooperation at the military level will go a long way in allaying Russian concerns over Allied ballistic missile defense efforts, and could help to serve the interests of the United States in establishing European-based interceptors.

Other established ballistic missile defense exercises such as the Dutch-led Joint Project Optic Windmill (JPOW) and Nimble Titan require more complete NATO integration in order to test concepts and challenge assumptions. In the past, NATO has had limited involvement in JPOW. An increased NATO role in this important exercise should include a larger stake in planning and integration ballistic missile defense at the operational and tactical level. Future iterations of the JPOW series should explore common US and NATO objectives such as interoperability, adapted C2 architectures, battle management, and the integration of multiple assets into an active, layered defense.

¹⁴¹ For a detailed operational-level ROE discussion with a sample ROE, see Charles Swicker, *Theater Ballistic Missile Defense From the Sea: Issues for the Maritime Component Commander*, Newport Papers No. 14, August, 1998, Navy War College.

¹⁴² *Russian-NATO Missile Defense Exercise to be Held in Moscow*, Russia & CIS Military Newswire, 29 September 2006. <http://missiledefenseadvocacy.org/index/bn09292006-2.html> Retrieved from the Web 23 October 06.

To explore its military role as an integrator at the strategic and operational levels, NATO should have a primary seat at STRATCOM's Nimble Titan exercise. In this capacity, NATO could be instrumental in developing commonly understood plans and policies for employment of ballistic missile defense systems in this annual global fight. Some ways in which a more integrated Allied approach could contribute to the BMDS would be for NATO to give its perspective in exploring the exercise aims of:¹⁴³

- Roles of the Pol-Mil Leadership, COCOMs, and NAT Allies in the execution of active BMD;
- Refining a concept for operating a third GBI site in Eastern Europe, to include information and situational awareness with Allies;
- Prioritization of defended assets within and across AORs; and
- Control authority for GBI allocation and dynamic reallocation.

The lessons learned from these exercises could quickly be translated into shared statements of work (SOW) between MDA and NATO for further concept development and test-bed integration in order to facilitate the technical side of interoperability.

Technical

NATO empowerment through political commitment and military action will set the conditions for industry-to-industry transatlantic technology transfer and architecture agreements. First, due to limited defense budgets, technology transfer agreements will be facilitated best where NATO Common Funding can be applied. Even the most robust of

¹⁴³ Ibid. Polaske.

agreements are useless if individual nations cannot afford them. Therefore, liberalizing technology transfer agreements between nations where there will be cost-sharing will stimulate the kind of international industry cooperation conducive to the spiral development of capabilities-based solutions.

In terms of architecture agreement, this must be based on the notion that systems must support a concept of employment and not the other way around. For example, the newly-certified NATO Response Force (NRF) is constrained by an antiquated set of single-purpose “tools” for force planning, logistics, air operations and battle management that are not interoperable. Therefore, commanders must decide how to run operations based on technical constraints while the objective system (Bi-SC AIS) is being developed. This is far from enabling, and exactly the ensnarement that must be avoided if NATO is to be empowered to be the technical integrator of transatlantic ballistic missile defense.

Another pitfall that must be avoided in the technical arena is that of contractual specificity. The THAAD program offers an example of how a contractual arrangement can cause the “tail to wag the dog” on RDT&E. In this case, the US government, not the contractor, was financially liable for overall program success. When performance specifications or timelines were not met, there was no contractor penalty that could be imposed. Therefore, open architectures that are not bound by contractor rights must be implemented. This will leave open and agreed C2 protocols that can bridge internet protocol (IP) based systems such as C2BMC with data link systems such as ACCS using experimental test-beds.

Processes required

A capabilities-based and modular approach must be applied to overcome the challenges associated with European ballistic missile defense integration. The processes required to realize this successful integration will be to name a lead European nation, develop a concept of operations, and develop modular capability packages in order to fulfill response options.

Appoint a European Lead Nation

According to a source in the Office of Defense Cooperation (ODC) in the Netherlands, the Dutch are the first country after Japan to cooperate to such a high degree with the United States on ballistic missile defense. The Dutch, more than any other European nation, possess the requisite national capabilities and interests to take the lead in moving ballistic missile defense forward in Europe.

The Dutch military demonstrates this “niche” propensity for ballistic missile defense in several arenas. First, the Dutch Ministry of Defense (MOD) leads the annual JPOW exercise and is an active partner in wider development and integration programs. One such example is that the Royal Netherlands Air Force (RNLAf) is the first in Europe to have PAC-3 capability. The Royal Netherlands Navy (RNLN) is developing three air defense and command frigates (called the LCF). The LCF class of ships carries the powerful L-Band APAR radar, and the first ship in service (entered in early 2002) already has SM-2 capability. As demonstrated with FTM-11, the Dutch aspire to complement US maritime capabilities as they progress to eventually acquire their own

SM-3 capability. The successful results of FTM-11 show that all of this is possible, and the Dutch are looking to implement this robust maritime BMD capability around 2010.

The Dutch are also taking the European lead in working on interoperability through bi-lateral agreements that facilitate technical transfers. Their political and military efforts have enabled ongoing industry-to-industry cooperation through US-owned Raytheon and Dutch-owned Thales. Lastly, ballistic missile defense planning and cooperation in all domains is further facilitated by the close proximity of several key agencies. The Dutch Ministry of Defense, the US Embassy's Office of Defense Cooperation and NATO's Command, Control and Consultation Agency (NC3A) are all in The Hague, Netherlands. A short drive away is NATO's headquarters in Brussels, Belgium. Using The Hague as the center for international missile defense cooperation also makes sense and fits well as the Netherlands hosted the groundbreaking November 2002 conference for the International Code of Conduct Against Ballistic Missile Proliferation (ICOC).¹⁴⁴

Develop a Concept of Operations

As lessons are gathered in NATO through exercises, wargaming and experimentation, a coherent concept of operations (CONOP) must begin to be developed in order to provide a recognized basis for all functions of ballistic missile defense by Alliance stakeholders. As a basis of legitimacy, a NATO BMD CONOP will have to be

¹⁴⁴ As of 1 January 2004, 111 countries have subscribed to the ICOC, also called "The Hague Code of Conduct (HCOC)." Source: US Department of State, Bureau of Nonproliferation, *International Code of Conduct Against Ballistic Missile Proliferation Fact Sheet*, Washington, DC, 6 January 2004. <http://www.fas.org/asmp/resources/govern/ICOC-6January2004.html> Retrieved from the Web 1 December 2006.

based on NATO framework documents, such as an authoritative Terms of Reference (TOR) which will have to reconcile how NATO will incorporate the language of the US capability-based 2002 Ballistic Missile Defense Policy. A key starting point will be how the Alliance will reconcile differing transatlantic definitions of “integrated” and “layered” defenses. NATO’s adoption of European terms of upper and lower tier systems, tactical ballistic missile defense, and missile defense versus the “seamless” US view that uses the phases of ballistic missile flight rather than specific system limitations will definitely have to be resolved. Besides semantic definitions, the TOR for the CONOP must also outline Alliance and national responsibilities as well as the processes and concepts involved. The gap that lies between what is currently available and what will be required at implementation, to include standards for an initial operating capability (IOC) and a full operating capability (FOC) will also have to be addressed.

In its content, the CONOP will have to define the participants, systems, and C2 architecture. It will also have to describe how they will interact based on the threat, scenarios, and response options. The framework for a streamlined development and integration process that allows for industry-based incentives for nations to contribute according to their will and capacity while simultaneously managing open architectures must also be provided. The CONOP must address not only the technical architecture, but also the command and control aspect of *how* these systems will serve their purpose once employed. It must address both Article 5 and non-Article 5 scenarios, accidental launches, and the ongoing efforts to preserve Russian strategic deterrence. Legal considerations dealing with debris risk management and rules of engagement must also be considered.

These solutions should be formed into capability packages that can grow incrementally over time as changes occur in technology, national will or capacity to participate in ballistic missile defense. Equally, capability packages should be able to respond to meet current or emerging threats, whether theater or intercontinental. In other words, the CONOP does not define an endstate for ballistic missile defense capability packages, but a means for continued evolution.

Build Modularity

To ensure viability for the long term, modularity in the form of capability packages must be developed to meet response options. Capability packages must consider national capabilities with a view to integrating existing and future systems. Modularity will provide the Alliance with the ability to adapt over the next 15-20 years to changes in political climate without a significant impact to overall capability effectiveness. It will also reflect military considerations such as changes or evolution in threat scenarios or strategic calculus, such as the development of an Iranian ICBM or perhaps the acquisition of long range missiles by Syria. Lastly, a modular approach will be able to compensate for technological advances by not locking its processes into protectionist paradigms.

A review of NATO's Defense Requirements Review (DRR) process (as is currently being conducted at ACT) will be required to enable the system to be more dynamic and responsive. Feedback loops will have to be built into the DRR to keep assumptions relevant. This not only facilitates modularity, but also allows for the best use of NATO Common Funding. A model for an integrated spiral development process

with a lead European nation will set the path from a CONOP to useable ballistic missile defense capability packages. A dynamic feedback process will facilitate the evolution of relevant capability packages and provide linkage to an approved and developing CONOP. From here, Contingency Plans (CONPLANs) can be built on the most current information through modeling, wargaming, simulations, and exercises—again validating assumptions for feedback into the process.

The intention of the capability packages is to have incremental and multi-dimensional capabilities to address changing or evolving threats, political climate, and technological advances over time. An illustrative example of four basic capability packages is shown in Figure 10 below:

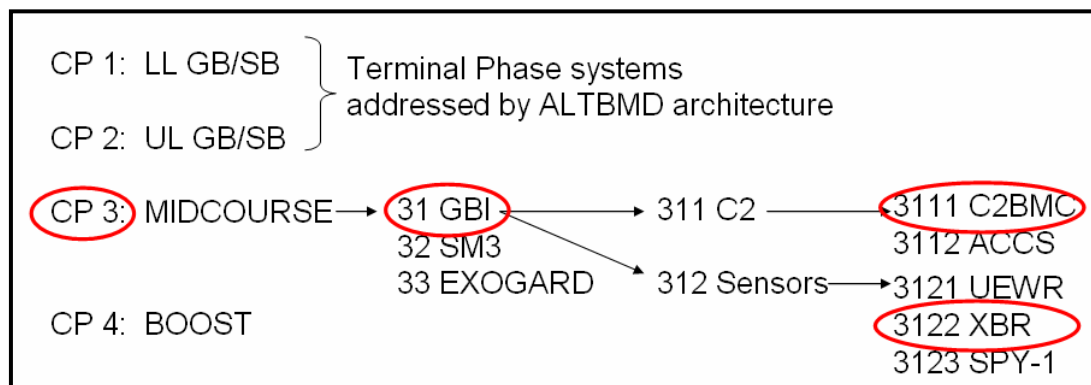


Figure 10—Ballistic Missile Defense Capability Package Menu Example

This model demonstrates the integration of both NATO and US ballistic missile defense terminology, using the currently employed ALTBMD model for the first two capability packages (labeled CP) to address the “terminal phase” of the BMDS. For example, CP 1 is Lower Level (LL) Ground Based (GB) or Sea Based (SB) and would include systems such as PAC-3 and an Aster-30 launched from a maritime platform.

Notice that no mention of nation is made, only on the capability required. The capability required in Figure 10, for example, is a mid-course defense (presumable to defend against an IRBM or ICBM) and selects CPs 3111 and 3122 (a GBI, X-band combination with C2BMC integration) to fulfill this role.

VIII. Conclusion

Will we wait until the next headline reads, *Iran fires missile capable of reaching Western Europe!* before looking at a sustainable way ahead for implementing ballistic missile defense in Europe? According to a European commentator, “Europe could easily become a target for states with WMD, not being able to reach America itself but able to severely hurt its allies. Therefore, out of self-interest, Europe would do well to address this danger and to cooperate with the United States on missile defense.”¹⁴⁵ On the other hand, the United States could arguably do more to cooperate with European interests on the matter. Therefore, an integrated approach to European ballistic missile defense is an opportunity to strengthen a symbiotic transatlantic security relationship. Europe needs the United States for security against long-term threats by use of their military potency. The United States needs Europe’s political clout to enable its efforts. This is not only to mitigate Russian concerns over a strategic imbalance, but also to allay Eastern European concerns about future EU integration and other key political considerations. For the U.S., the more practical purpose of gaining the long-term use of European terrain and airspace to emplace missile defenses against an increasingly threatening Iran will be served.

¹⁴⁵ Ibid. Agüera

NATO was not designed as an organization that builds weapons. It has always been a political alliance used to provide a mutually-supporting transatlantic security link. However, as NATO strives to redefine its *raison de être*, agreeing on a common missile defense solution for an agreed upon threat can create a harkening to the strong bond of the Alliance's past for which it was originally created. Looking to the future, "Missile defense is the down payment for a major debate over the nature of deterrence in the 21st Century."¹⁴⁶

Critics of BMD in Europe are extremely short-sighted in that they do not recognize the burgeoning threat. Twenty years ago, all of our threat assessments and spending priorities within the U.S. and NATO were focused on the deterrence of one large-scale conventional threat. Ten years ago, planning and conducting "low-intensity conflicts" and peacekeeping type missions worldwide were in vogue. Now, we are longing for the "bad old days" when we could understand the threat better. If an imminent ballistic missile threat—a clear and present danger, if you will—presents itself in Europe in the near future, its citizens will be shaking their collective fists at their politicians, asking why they have not put measures in place to protect them. Answers such as, "The political will of the people did not deem it suitable at the critical time of capability development a decade ago..." will not suffice. To say that ballistic missile defense in Europe should not be a priority is a minimalist approach that sacrifices long-term security for short-term popularity.

In the end, it is not really too costly or too difficult to allow Allied "niche" capability nations to contribute their abilities based on an Alliance DRR mandate. Of course, the United States will have to pony up most of the money initially, but NATO

¹⁴⁶ Ibid. Agüera

Common Funding could be applied to building the appropriate capabilities as soon as the political will permits. For the short term, this could mean that existing systems are contributed by nations (even if it is only one US GBI system for now) with NATO serving as the integrator for C2 and sensors (i.e. using the ALTBMD model). In the longer-term, this could mean that national industrial bases are given benefit through contribution of their national niche capabilities. In this way, even the concept French EXOGARD system would be able to be integrated when it comes on line in the next 15-20 years. This kind of approach allows an Alliance adapt to a changing threat. Because we do not know what the next decade will bring, going down a contracted path of producing capabilities that may not be relevant to a future problem at hand must be avoided. Putting immediate, visible measures in place to mitigate the Iranian ballistic missile threat must begin now if longer-term solutions can be found to counter it before it becomes fully-operational: The Iranian ballistic missile threat must be more aggressively dealt with in order to be deterred. To accomplish this, the United States and Europe can find common ground in the same place they have always found it—with shared capabilities to address that threat. The fusing of the political, military, and technical planning domains of ballistic missile defense must occur in Europe through NATO to create a mutually-beneficial and credible ballistic missile defense capability that helps both the United States and Europe to stand their common ground.

List of Terms

ABL	Airborne Laser
ACCS	Air Command and Control System
ACO	Allied Command Operations
ACT	Allied Command Transformation
ALTBMD	Active Layered Theater Ballistic Missile Defense
AOR	Area of Responsibility
BASIC	British American Security Information Council
Bi-SC AIS	Bi-Strategic Commands Automated Information System
BMC3I	Ballistic Missile Command, Control, Communications and Intelligence
BMD	Ballistic Missile Defense
BMDA	Ballistic Missile Defense Agency
BMDS	Ballistic Missile Defense System
BMEWS	Ballistic Missile Early Warning System
C2	Command and Control
C2BMC	Command Control, Battle Management and Communications
CAOC	Combined Air Operations Center
CCDR	Combatant Commander
CENTCOM	Central Command
CMF	Capabilities Management Framework
CNAD	Conference of National Armaments Directors
COCOM	Combatant Command
CONOP	Concept of Operations
CONPLAN	Contingency Plan
CP	Capability Package
CPX	Command Post Exercise
DAL	Defended Asset List
DPP	Defence Planning Process
DRR	Defence Requirements Review
DSP	Defense Support Program
EBO	Effects Based Operations
ESDP	European Security and Defence Policy
EU	European Union
EUCOM	European Command
FDO	Flexible Deterrent Option
FOC	Full Operational Capability
FTM	Flight Test Maritime
GAO	Government Accounting Office
GMD	Ground-based Midcourse Defense
HD/CS	Homeland Defense and Civil Support

IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
ICOC	International Code of Conduct
INF	Intermediate Range Nuclear Force
IOC	Initial Operational Capability
IP	Internet Protocol
IRBM	Intermediate Range Ballistic Missile
JFCOM	Joint Forces Command
JOA	Joint Operations Area
JPOW	Joint Project Optic Windmill
KEI	Kinetic Energy Interceptor
LFX	Live Fire Exercise
LRS&T	Long Range Surveillance and Tracking
LTRS	Long Term Requirements Study
MC	Military Committee
MD	Missile Defense
MDA	Missile Defense Agency
MDAA	Missile Defense Advocacy Agency
MDFS	Missile Defence Feasibility Study
MEADS	Medium Extended Air Defense System
MOD	Ministry of Defence
MOU	Memorandum of Understanding
MRBM	Medium Range Ballistic Missile
MTCR	Missile Technology Control Regime
NAC	North Atlantic Council
NAMEADSMA	NATO Medium Extended Air Defense System Management Agency
NATO	North Atlantic Treaty Organisation
NC3A	NATO Command Control and Consulting Agency
NDS	National Defense Strategy
NMCC	National Military Command Center
NMD	National Missile Defense
NMS	National Military Strategy
NORAD	North American Aerospace Defense Command
NORTHCOM	Northern Command
NPR	Nuclear Posture Review
NRF	NATO Response Force
NSDP	National Security Presidential Directive
NSS	National Security Strategy
NT	Nimble Titan
ODC	Office of Defense Cooperation
PAAMS	Principle Anti-Air Missile System

PAC-3	Patriot Advanced Capability – 3
PACOM	Pacific Command
P ^k	Probability of Kill
PS	Planning Situation
QDR	Quadrennial Defense Review
R&D	Research and Development
RDT&E	Research Development Testing and Evaluation
RNLAF	Royal Netherlands Air Force
RNLN	Royal Netherlands Navy
ROE	Rules of Engagement
RV	Reentry Vehicle
SAMP/T	Sol-Air Moyen Portee/Terrestre
SBI	Space Based Interceptor
SBIRS	Space Based Infrared Satellite
SHAPE	Supreme Headquarters Allied Powers Europe
SM	Standard Missile
SOW	Statement of Work
SRBM	Short Range Ballistic Missile
STANAVFORMED	Standing Naval Force Mediterranean
STRATCOM	Strategic Command
STSS	Space Tracking and Surveillance System
THAAD	Theater High Altitude Air Defense
TMD	Theater Missile Defense
TOR	Terms of Reference
UEWR	Upgraded Early Warning Radar
UNSC	United Nations Security Council
USEMB	United States Embassy
VLS	Vertical Launch System
WMD	Weapon of Mass Destruction
XBR	X Band Radar

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